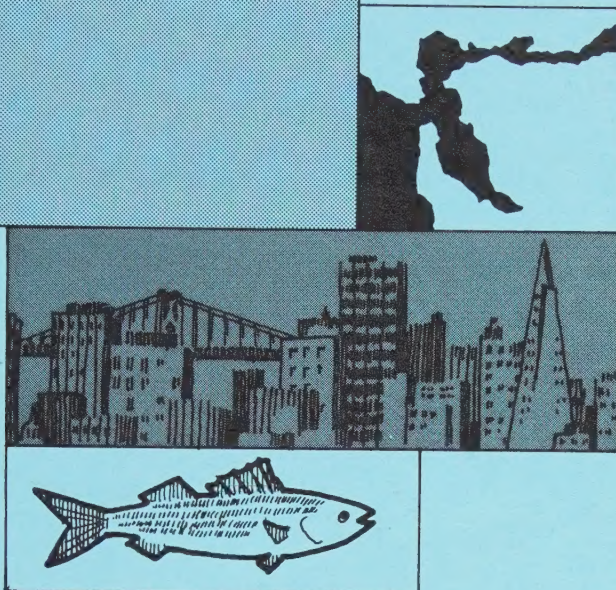


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FOR PUBLIC
REVIEW AND COMMENT
Not approved by ABAG Environmental Management Task Force
or Executive Board

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DRAFT ENVIRONMENTAL MANAGEMENT PLAN FOR THE SAN FRANCISCO BAY REGION

SUMMARY

December 1977

This plan was prepared by the Association of Bay Area Governments with a grant and other assistance from the Environmental Protection Agency, in cooperation with Bay Area Air Pollution Control District, Metropolitan Transportation Commission, San Francisco Bay Regional Water Quality Control Board and Counties of the Bay Area with assistance of these agencies: ■ Army Corps of Engineers ■ California Air Resources Board ■ California Department of Health ■ California Department of Transportation ■ Council of Bay Area Resource Conservation Districts ■ Governor's Office of Planning and Research ■ Lawrence Berkeley Laboratory ■ Lawrence Livermore Laboratory ■ San Francisco Bay Conservation and Development Commission ■ State Water Resources Control Board ■ State Solid Waste Management Board ■ Wastewater Solids Study

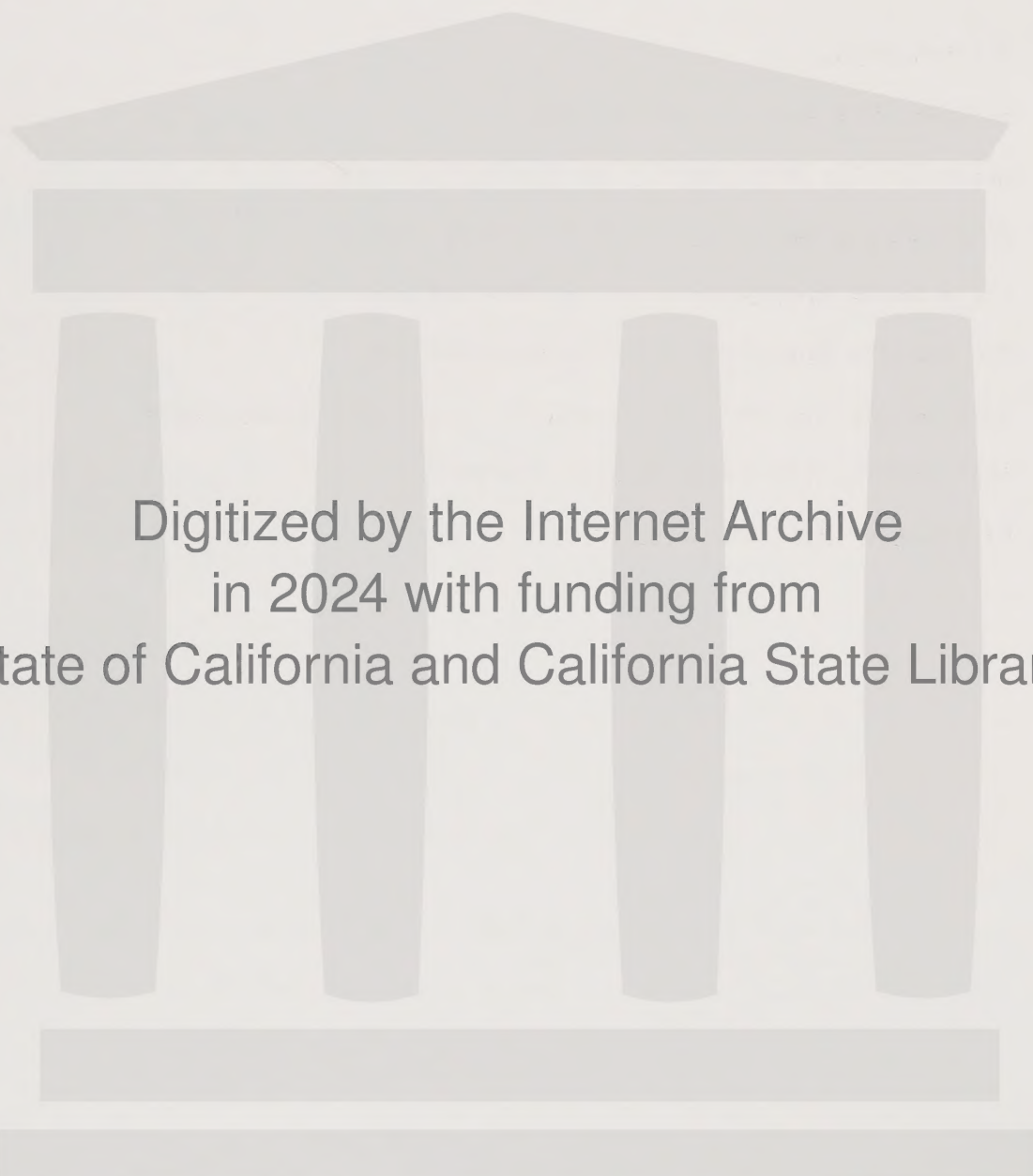
The Association of Bay Area Governments was designated by the State and Federal governments to prepare an Environmental Management Plan for the San Francisco Bay Area. This draft plan is the product of more than 14 months of cooperative effort by the staffs of the participating agencies listed on the front cover--as well as the Environmental Management Task Force, advisory committees and the public.

ABAG staff is responsible for the draft plan. Sections of the plan, however, were the specific responsibility of other agencies. In the development of the water quality management plan, the staffs of Bay Area counties drafted the surface runoff plan recommendations. In the air quality plan, the staff of the Bay Area Air Pollution Control District developed the stationary source controls, and the staff of the Metropolitan Transportation Commission developed the transportation controls.

The draft plan was prepared in part under a grant from the Environmental Protection Agency under Section 208 of the Federal Water Pollution Control Act Amendments of 1972. The opinions expressed are not necessarily those of the Environmental Protection Agency.

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The material for this summary of the Draft Environmental Management Plan is drawn directly from the plan. The plan recommendations summarized here are sections of five chapters covering water quality, water supply, solid waste management, air quality and the process for updating the plan. In each case, the plan chapters have several sections describing the problems in more detail than is possible for this summary. For that reason, readers who wish additional information about these topics should consult the full text of the Draft Environmental Management Plan.

INTRODUCTION

This is the Draft Environmental Management Plan for the San Francisco Bay Area. It describes what steps would be necessary to meet the standards of the Federal Water Pollution Control Act Amendments of 1972 and the Clean Air Act of 1977, as well as other State and Federal laws.

The Environmental Management Plan is being prepared by the Association of Bay Area Governments, with the assistance of the Bay Area Air Pollution Control District, the Metropolitan Transportation Commission and the San Francisco Bay Regional Water Quality Control Board. Plan preparation is under the direction of a 46-member Environmental Management Task Force, a policy advisory body to the Regional Planning Committee and Executive Board of the Association of Bay Area Governments. The task force has been charged with preparing a plan for solving water, air and solid waste problems. The draft plan presents a series of recommended actions that shows how the region could solve the problems, and, in so doing, meet key Federal and State standards. The social and economic consequences of taking these actions are noted to permit more informed decision-making about whether to include or modify these actions in the Environmental Management Plan.

This draft plan is being submitted for review by affected local, regional, State and Federal agencies, and the public. Comments and recommendations will be considered by the ABAG Environmental Management Task Force, Regional Planning Committee, Executive Board and General Assembly.

In February 1978, after initial public review and comment, the task force will recommend an Environmental Management Plan to the ABAG Regional Planning Committee and Executive Board for their public hearings and recommended action. On April 6, 1978 the General Assembly--at which each ABAG member city and county has a vote--will adopt an Environmental Management Plan. Once adopted by the General Assembly, the plan will be formally acted upon by several State agencies--listed in Chapter IX--each approving appropriate parts of the plan. The plan is scheduled to be submitted by the State to the Environmental Protection Agency by June 21, 1978. EPA must act on the plan by October 19, 1978.

This plan is necessary for two reasons:

- The Bay Area still faces environmental problems that need to be solved.
- Federal law requires various regional plans, which are combined and made consistent in this plan.

Without an EPA-approved plan, future Federal sewerage and transportation funds for the Bay Area may not be granted.

There are three goals of the plan:

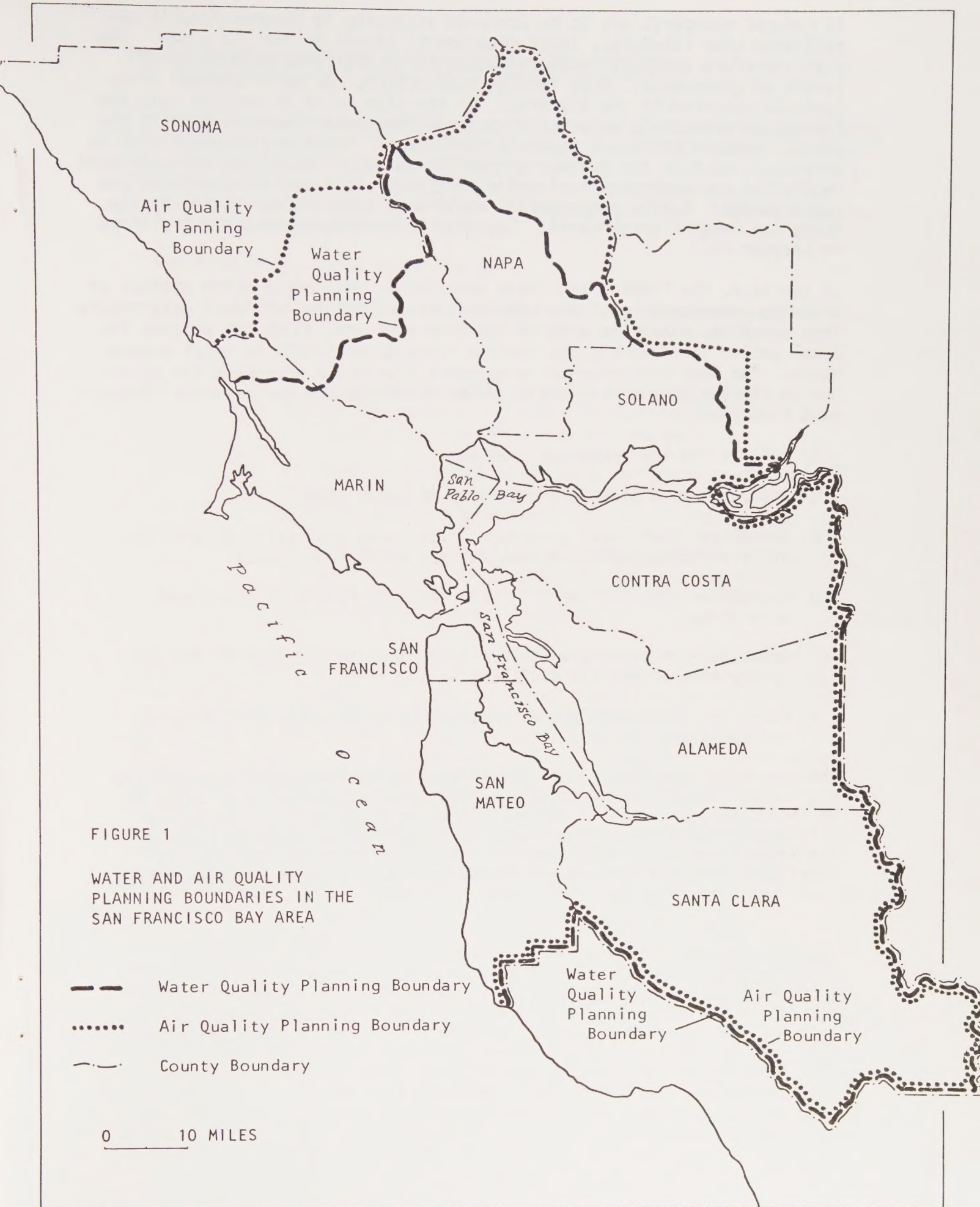
1. To lead to the greatest possible improvements in water and air quality and problems caused by solid waste.
2. To lead to compliance with Federal and State standards and objectives at the earliest possible date.
3. To be implementable--that is to have no social, economic or environmental effects so unacceptable that the plan cannot be carried out.

Water quality (areawide waste treatment management) plans are required by Congress in Section 208 of the Federal Water Pollution Control Act. Such plans will cover the entire nation. In about 170 metropolitan areas of the country, regional planning agencies like ABAG are preparing "208" plans. In California, for areas not designated for regional planning, the State Water Resources Control Board is responsible for preparing such a plan. For the purposes of meeting the requirements of Section 208, the San Francisco Bay Area includes the counties of Alameda, Contra Costa, San Francisco, San Mateo and Santa Clara Counties, with major parts of Marin, Solano, Sonoma and Napa Counties.

State plans to achieve and maintain Federal air quality standards are required by Congress through the Clean Air Act. In the Bay Area, an air quality plan is being prepared for the area included within the San Francisco Bay regional air basin. This includes most of the nine counties, with the exception of northern Sonoma County and northeastern Solano County. The air quality plan will be included in the Federally required statewide implementation plan.

Planning for solid waste covers all nine counties, and the solid waste plan will be included in the State plan to meet the requirements of the Resource Conservation and Recovery Act of 1976. Planning boundaries are shown in Figure 1.

This draft plan covers four major environmental issues: water quality, water supply, solid waste and air quality. The water quality chapter of the plan covers surface runoff, municipal and industrial discharges, and miscellaneous pollution sources. The water supply chapter also covers water conservation and reuse. The plan also examines how growth in the region affects environmental pollution. It describes how planning would continue after an initial plan is adopted. Updating this plan is required by Federal law.



If Federal standards are to be achieved according to Congressionally established time schedules, local governments cannot do the job alone. The plan therefore contains recommendations for coordinated actions by all levels of government. Only through such actions can environmental standards be achieved in the Bay Area. If the plan is to be carried out, the Federal government is expected to provide continued financial support for public transportation and sewerage facilities. State action would also be necessary, such as for further automobile emission reductions and continued regulation and enforcement of solid waste and water quality standards and requirements. Cities and counties would need legislative actions by the State and Federal governments. Legislative recommendations are contained in Chapter VIII.

In the past, the Federal and State governments have often acted without an adequate understanding of the complexities and burdens of local governments. They sometimes asked too much of local governments, given the demands for local public services and the limited revenues available to local governments. The ABAG environmental management program is providing the opportunity for Bay Area cities and counties to develop an Environmental Management Plan that:

- o Defines the environmental problems.
- o Indicates what steps are necessary to solve them.
- o Recognizes that local governments must make good faith efforts to solve existing pollution problems and avoid future ones.
- o Recognizes that such efforts will cost all levels of government more money.
- o Establishes a procedure for public review and approval of the plan by Bay Area cities and counties.
- o Calls for State and Federal governments to do their part to carry out the plan.

The succeeding chapters of this plan describe environmental problems and their possible solutions, as well as the benefits and costs of doing so. In this plan the staffs of the participating agencies indicate to the citizens of the Bay Area what steps would need to be taken to achieve the Federal and State requirements. From this point on, the choices about this plan are up to the citizens and their elected representatives.

PUTTING THIS PLAN IN PERSPECTIVE

State and Federal agencies have given local governments the responsibility of developing a plan that meets national and state requirements for clean air and water, and for disposing of solid waste. A plan containing these basic elements cannot be prepared without an understanding of environmental problems and issues, nor can it be prepared apart from other social and economic concerns of the region.

The plan therefore does these things:

1. It identifies major environmental problems in water quality, water supply, solid waste handling, and air quality.
2. It recommends measures to solve these problems, and identifies measures necessary to achieve Federal and State standards for clean air and water.
3. It assesses recommended measures for their environmental impact and dollar cost, as well as for their probable social and economic effects on the region.
4. It recommends actions to carry out approved measures, measures to monitor the program, and procedures for continually adjusting the plan as new information or new techniques are available.

The plan shows that environmental problems are in several instances severe and should be addressed soon or the solution could become even more expensive and more difficult to solve. The solutions to these severe environmental problems have far-reaching effects on the society and economy of the region. Balancing environmental goals with social and economic goals--such as mobility, jobs, and housing--involves many difficult public decisions. A great many people, for instance, depend on the mobility of a private car rather than public transit for getting to work, for recreation and running errands. At the same time cars pollute the air and endanger public health. They create congestion, add to neighborhood deterioration, and make walking to school more dangerous for children. The plan provides the region the opportunity to decide how much mobility can be exchanged for less congestion and cleaner air.

In reading this plan many other conflicting goals will become apparent. Environmental decisions, as proposed in the plan, require careful evaluation in relation to other needs in the region. This process requires full public participation and informed action by local elected officials, especially those of cities and counties, for these are the only institutions whose collective authority covers not only the environment, but the social and economic well-being of the region. This chapter describes what impacts the region could expect if all actions recommended by the plan are taken. However, no plan can answer every question or anticipate every conflict. This plan therefore proposes a procedure that would continue the evaluation of problems and resolve the conflicts.

What's Our Current Situation?

The Bay Area is maturing as a urban region. In the 1940s our population increased by 55 percent--its largest increase in any 10-year period since 1900. From 1960 to 1970, Alameda, Contra Costa, Marin and Santa Clara Counties grew rapidly--faster than Los Angeles County--although San Francisco's population declined by 3.3 percent. By 1977, our population had increased to more than 4.9 million--5.5 percent higher than the population in 1970. In the 1950s and 1960s a substantial suburban area of single family homes was developed at the edge of the older, more dense core areas. These areas depended on the automobile for travel. Growth occurred because gasoline was cheap and there seemed, at the time, no considerable costs associated with that kind of development. Federal tax laws and mortgage insurance programs accelerated and aided this development.

The amount of urbanized land in the Bay Area increased dramatically. The urbanized portion of the region has grown from 42 square miles in 1852 to about 1,300 square miles today. As sprawl development became more popular over the past 30 years, population densities dropped. In the next few years, the Bay Area is expected to continue to grow and to convert additional open space to urban uses. Generally, suburban areas would grow more rapidly and the population of center cities would continue to decline, resulting in continued sprawl and longer commuting.

Population has continued to grow in large measure because the Bay Area continues to increase its employment opportunities. Early a major transportation, trade and financial center of the West, the Bay Area has more recently grown in aerospace and electronics industries due to the large number of highly skilled residents and significant government investments.

While there were economic problems during the 1960s and 1970s, the Bay Area continued to attract people convinced that jobs are available. At the same time unemployment is more intense here than in the rest of California and the nation. In 1977, our jobless rate was 7.6% compared to 7.4% for the State and 6.9% nationally. Jobless rates in Contra Costa, Marin, San Francisco and San Mateo Counties have nearly doubled since 1970. In the two counties that have gained most in population since 1970--Santa Clara and Sonoma--the jump in unemployment rates was about 50%, while the increases in Napa and Solano Counties was about 10%.

Local government has traditionally relied upon urban growth and economic development to increase revenues to provide governmental services. The costs of government have risen markedly in recent years, but revenues have not kept pace. This is especially true in older areas, as they can no longer rely on growth for new revenues. Many parts of the region are therefore increasingly concerned about the costs of public programs and the ability of local governments to provide adequate services based on relatively fewer resources.

Much progress has been made in cleaning up our environment. The waters of the Bay are much cleaner than they were years ago. Many Bay Area jurisdictions recently have begun work on major new wastewater treatment facilities, as have many industries. Until this drought, the worst on record, we have had an adequate supply of safe water; during this drought we are still managing to supply essential amounts of water with no compromise on safety. We still manage to collect and dispose of solid waste without major public health problems. And air quality in the Bay Area has been gradually improving in the last few years.

But serious problems remain. The Bay is not yet clean, we will need more water, and we are running out of convenient places to bury solid waste. Our most serious environmental problem, though, is air quality. The air is unhealthy too often in too many places, and the sources of pollutants are widespread, expensive and difficult to control. If present trends continue, the air will continue to get cleaner until 1985. But then it will begin to deteriorate.

Water pollution control actions in recent years have produced substantial improvements. Yet some problems remain and some of these problems are serious.

- Shellfish and the waters overlying shellfish beds are contaminated. All shellfish and all waters are not contaminated, and those that are contaminated are not always so. However, there is an abundant shellfish resource in the Bay, and the use of that resource is restricted because of the threat to public health. The sources of contamination are surface runoff, vessel wastes, spills, and municipal-industrial sewage discharges (even though these discharges are much cleaner than a few years ago).
- Several subtle adverse effects have been noted. These include a higher incidence of premature births in harbor seals, thin shells in eggs of aquatic birds, cancer-like growths on mussels, and the drastic reductions in the population of the Dungeness Crab. Pollution may not be the cause but it is certainly suspect.
- The flow of fresh water from the delta into the Bay will be reduced in the future. A drain to carry agricultural wastes (high in salt and nutrients for algae, less pesticides than Bay waters) from the central valley to the north bay is being considered. Both could cause problems.

Surface runoff from agriculture and urban land contributes to water pollution. At the same time we are only beginning to learn about the cause and effect relationship between this runoff water and the remaining pollutants.

If the region can eventually clean up its waters we will benefit from a renewed marine economy, improved recreational facilities, and the reuse of reclaimed water. The costs of cleaning up the water are largely dollars needed for new treatment facilities and research. A majority of these costs are expected to be borne by State and Federal funding.

The drought of the last two years has shown that people need less water than was thought. It has also shown that the facilities may not be able to deliver as much water as was thought. These two factors suggest that the regional may be able to reduce its needs for currently planned water projects. Obviously in years of more rainfall there is no reason to continue strict conservation measures, but continued conservation at a moderate level is the most economical first step in matching supply and need. The question in water supply is what action should be taken to assure adequate supplies for the region as it grows? The costs of improving out water supplies are largely the dollars needed to construct need dams and transport systems. Reducing the number of such projects will obviously save money. The benefits of an adequate supply are our ability to make it through future droughts without undue harm to our health and economy, and to have a plentiful supply at relatively low cost in years of average or better rainfall.

Solid waste presents a somewhat different problem. Countywide solid waste plans, prepared and adopted under a State law enacted in 1972, go a long way toward controlling the contamination caused by the existing system of landfilling wastes. But, as present landfill sites fill up and close, we have to go further away to find appropriate new sites to properly dispose of wastes. This adds to costs. Also, we dispose of metals, glass, paper and other materials that can be recycled. Recycling requires fewer land resources for burying wastes and less dependence upon increasingly scarce virgin natural resources. The major portion of the Bay Area's wastes that cannot be recycled is made up of organic matter--garbage, yard wastes and reuse. Facilities to convert these to various forms of energy may be operative by the early 1980s, once current site-studies establish economic, technological and environmental feasibility. In addition, processing waste materials for reuse requires less energy than processing raw materials the first time.

Projected growth for the Bay Area means that, if methods aren't altered, we will generate 15.5 million tons of solid waste in 1990 or 4 million more tons than in 1975. Costs of reducing wastes and increasing recycling are difficult to estimate. Products made of virgin natural resources are now cheaper than those made from recycled materials. Improved solid waste management means more land available for recreational and development purposes. Better management conserves energy and material resources.

A great many factors contribute to air pollution: industry, cars, small firms such as dry cleaners, and surfacing materials such as paint and asphalt. Those most susceptible to bad air are the young, the elderly and those with special medical problems. Federal and State air standards were set to achieve an environment not harmful to susceptible groups and to lessen the possibility of health hazards to other people. The details on these standards are spelled out in Chapter VI. Action by all levels of government to control virtually all sources of air pollution is required if the Bay Area is to meet air quality standards. Reducing the health hazards posed by air pollution will affect the daily lives of most citizens and cost a great deal of money. We know that it will require substantial investments by private industry in pollution control devices

and by citizens in pollution controls for cars. It will require that we reduce the number of vehicle miles traveled in the region. The result would be clear benefits in better health. Moreover, cleaner air could mean improved agricultural yields and greater recreational opportunities.

What Can We Do About It?

Since a large number of variables create environmental problems, it is not surprising that a large number of measures are proposed to change the interaction. Just as the problems are related (cleaning up the water creates solid waste) so are the solutions. This plan is not simply a list of independent actions. Although some of the proposals stand alone, others have been tailored to complement one another. Their overall effect, both benefits and costs, is greater than the sum of the individual effects.

One important point in keeping this plan in perspective is how its recommendations are affected by population growth. In 1975, the region's population was approximately 4.8 million people. For the purposes of the Environmental Management Plan and other planning activities in the region, ABAG and other participating agencies (notably the Metropolitan Transportation Commission) produced the latest in a series of projections on population, land use and employment in the region.

These projections show a Bay Area population of 5.4 million to 6.1 million for the year 2000. Households are expected to be between 2.5 million and 2.6 million, and employment from 2.6 million and 2.9 million. Labor force (and employment) are estimated to grow at a faster rate than total population. The projected average annual growth rate for labor force through 2000 is 0.9 to 1.3 percent compared to a population growth rate of 0.5 to 1.0 percent. Households--or occupied housing units--are estimated to grow at a faster annual rate than either population or labor force--1.4 to 1.6 percent.

The projections were developed as follows:

- Future regional totals were projected, based primarily on fertility rates, rate of migration into the region and trends in economic development. The region's rate of economic development was based on projections of the nation's economy and the region's share of that development. Regional projections were expressed in a range to account for uncertainty about fertility, migration and economic development (Examples of factors contributing to the uncertainty: Congress might change laws affecting legal and illegal foreign immigration; government laws and practices on birth control and abortions might affect fertility rates; the interaction of international and national economies--particularly regarding energy--has rippling effects down to the regional level).

- Local agencies were surveyed by county agencies assisted by ABAG. The survey collected the current land development and service provision policies of the local agencies.
- Total population and employment were distributed in the region among 440 zones. Each zone is a combination of census tracts. The distribution was consistent with local development policies for the first decade of growth. After 1985, densities had to be increased to accommodate projected growth.
- The zones were added together to give totals for cities, counties, drainage areas and other units. (These were the provisional Series 3 projections).
- The provisional projections were reviewed by local agencies and adjusted to reflect this review.
- During the process of integrating the plans, alternative projections were made, consistent with the air quality recommendations for compact development. Integration and the use of these revised projections are described in Chapter VII.

Two facts govern the use of projections for the Environmental Management Plan:

1. The region's population cannot be determined precisely. Birth, migration economic development rates cannot be projected with certainty. The uncertainty is accounted for in the range--the difference between the high and the low projections. In 1975 the region's population was 4.8 million. The high projection for the region in the year 2000 is 6.1 million. The low projection is 5.4 million. The difference is 700,000, slightly more than the present population of San Francisco.
2. The plan does not recommend a population total for the region. Nor does the plan include recommendations that significantly affect the total. The range of 5.4 to 6.1 million provides a working assumption on the numbers of people we can expect in the region by the year 2000. The compact growth recommendations would only have a significant effect on the future distribution of population in the region, not on the total.

These two facts mean that it is not appropriate to assume a single projection, although it is often done to give the impression that planning is easier and more precise than it can be. A plan must be prepared that accommodates uncertainty:

- Plan recommendations should accommodate the uncertainty represented by high and low projections.

- The continuing planning process must be capable of adjusting the plan as growth trends change.

The specific recommendations of the plan are spelled out in chapters III through IX. These recommended actions were developed on the basis of technical findings and the advice and direction of the Environmental Management Task Force, technical advisory committees and public comments. Preliminary recommendations were circulated last September, and changes have been made in the plan.

Listed below are the highlights of the plan:

Water Quality

- Completion of the construction sewerage facilities program to clean up municipal and industrial discharges
- Programs in each county to reduce pollution by surface runoff
- A program for the re-establishment of recreational and commercial harvest of shellfish in the bay
- Establishment of the San Francisco Bay-Delta Research Program to coordinate ongoing studies and initiate studies into poorly understood problems.

Water Supply

- Formation of a Water Management Coordinating Council, a voluntary association of major water agencies to address regional supply-demand issues
- A program for a moderate level of regionwide water conservation
- Reclamation and reuse projects.

Solid Waste

- Carrying out the initial phases of the county solid waste plans, that call primarily for continued landfilling
- Initiation of programs to reduce the amount of solid waste generated (e.g., by reducing excess packaging) and to increase recovery and recycling of solid waste.
- Programs to better control the disposal of hazardous solid waste
- A program to handle the increasing amounts of sewage sludge.

Air Quality

- Controls on stationary sources (industries, commercial establishments), specifically the use of "best available control technology" on all of these sources
- Controls on pollutant emissions from vehicles, including a 50% cleaner car than current regulations would require and a regionwide program of inspection and maintenance of all vehicles to see that pollution control equipment is functioning properly
- A program of transportation controls (e.g., toll increases, more mass transit, parking regulations) coupled with management of development to put jobs and residences closer together, to put jobs and residences closer to mass transit, and to otherwise reduce the use of the automobile. The transportation and development programs would reduce the number of miles traveled by automobile
- Review of all proposed new industries and new traffic-generating developments (e.g., shopping centers) to see that they would not significantly impair the region's clean-up of the air. Those that would cause impairment would not be allowed as proposed.

Continuing Planning and New Legislation

- No major changes in the powers and authorities of existing agencies and no new agencies
- A number of formal agreements among agencies to coordinate planning
- An annual update of this plan, guided by the Environmental Management Task Force and approved by local governments acting together, then by State and Federal regulatory agencies
- State and Federal legislation to provide financial support for local governments environmental management responsibilities
- Provide incentives to reduce waste generation, to create favorable market conditions for recycled products and to promote private sector actions for compact development
- Support research and development programs for resource recovery technologies (e.g., removal of heavy metals from sludge).

Earlier in this chapter, two conditions were established so that the plan could accommodate the uncertainty about population.

The plan would accommodate the high and low projections of population. The continuing planning process calls for an annual update of the plan. The annual update would include a revision of projections. The recommendations for solid waste would not change if the high or low projection occurs. At this time the same is true for water supply. But adopting the plan's recommendation for a Water Management Coordinating Council would provide a way to adjust water supply in keeping with population trends.

The water quality plan project list for municipal/sewerage facilities is affected, as shown on the list. Some projects would have their timing affected by population growth trends, and some projects would not be needed if population trends approach the lower figure. Decisions on these projects should be made on a case-by-case basis in the continuing planning process. The decision on whether and how such projects should be built should be based on population ranges and availability of funds, life of the project, etc.

The set of recommendations in the air quality plan would achieve and maintain the standards. For either projection, meeting the standards would require application of the rules on "new, modified and indirect sources" of air pollutant emissions. Depending on the success of all other air pollution controls recommended in this plan, these reviews would require:

- The prohibition of some new industries with significant emissions
- Increased cleanup from existing sources through off-sets/negotiation or in some cases prohibition of modifications proposed by existing sources
- Change in design or location or in some cases prohibition of indirect sources (for example shopping centers).

The higher the rate of growth, the more stringent control measures generally would have to be applied for the region to meet the standards. A greater fraction of permits would be denied, off-set requirements would be increased, or an amended comprehensive strategy would be needed.

What Does This Mean for City and County Governments?

For many local jurisdictions, especially those acting as water and/or wastewater agencies, environmental management responsibilities are not new. The plan proposes a more active role for local governments in planning and evaluating new programs and facilities. Each year, local governments acting together would approve the update of this plan. The

annually updated plan would cover, at a minimum, water quality, water supply, solid waste and air quality. Through review, modification, and approval of the plan, local governments would be taking on responsibilities now almost exclusively exercised by State and Federal governments.

In improving air quality through proposed land use management and transportation facilities, local governments would be responsible for a wide range of actions. The plan recommends "compact growth" as a means of decreasing auto emissions. Local governments would be primarily responsible for carrying out this aspect of the plan. The plan calls for wastewater, water supply and transportation investments to be consistent with a more orderly, concentrated form of development. Within this set of regionally agreed upon policies, local governments would continue to have primary responsibility for land use management. It is recognized that a close working relationship among cities, LAFCOs, and counties would be required to achieve consistent implementation.

Additional costs would be required of local government to meet the need for new facilities recommended in this plan. Improving wastewater treatment facilities would increase both capital and maintenance costs. Public education programs to alert citizens to recycling efforts, and continued water conservation programs would all cost money. Changes in local general plans and zoning would cost staff time. These increased costs would be reflected in higher costs of doing government business.

The costs of wastewater treatment facilities will depend upon both the overall population of the region and its development patterns. ABAG projects the population of the region to be between 5.4 million and 6.1 million people by the year 2000. With a smaller population and compact development fewer new facilities would be required. With a smaller population and continued sprawl development, many of the facilities listed in the 20-year wastewater facilities project list would still be required to serve new population centers. For example, plants in San Jose and the East Bay Municipal Utility District have excess capacity of approximately 74 million gallons per day or enough capacity to accommodate more than 700,000 additional people. If development is encouraged in areas already served by these facilities rather than outlying areas, new facilities or expansions in capacities in those areas could be delayed.

If the regional population reaches 6.1 million, additional treatment capacities, noted in the 20-year list, will be required. Compact growth configurations could affect the sizing and timing of these new facilities. Therefore the extent of these savings cannot be estimated at this time.

There are also several less certain costs and benefits that could accrue to local governments as a result of this plan. These need to be carefully monitored as the plan is implemented. If the costs become too burdensome, adjustments to trim back pollution control efforts would be required. If greater benefits are created than expected, additional efforts can be made to achieve environmental standards more rapidly.

Initial assessments of compact growth indicate that there may be overall savings to local governments. One characteristic of compact growth is that more growth would occur in areas with existing or planned services. For example, it is estimated that compact growth could save local governments as much as \$700 per housing unit in new capital expenditures. Expenditures for facilities to reach "leap frog" developments would be less because capacities of existing facilities would be used more efficiently. However, the capacities of these facilities would be reached earlier. The recommendations also call for a better balance of industrial/commercial development and residential construction.

Tax revenues are an area of some uncertainty. In compact growth, new tax revenues would be generated by cities getting development that would otherwise occur in unincorporated areas. Counties are expected to have fewer service requirements in unincorporated areas. What is unknown is how these potential savings will accrue to individual jurisdictions. Some studies indicate that service costs for very dense or very scattered development are higher than the kind of moderate development called for in this plan. It is clear that compact growth could provide new amenities to Bay Area residents. For example, if all anticipated new residential growth for a regional population of 5.4 million were accommodated at densities averaging 5.9 units per net acre, the Bay Area would have 100,000 more acres in open space and agriculture by the year 2000 than it would without compact development. No housing units are lost; neither are construction jobs. And in almost all areas, continued single family construction would be expected.

What Does This Mean To Private Industry?

The recommendations call for private industry to concentrate on developing new and sophisticated technologies that can more efficiently reduce pollution emissions for both air and water. New technologies would be required to reduce emissions for new and existing facilities if air quality standards are to be achieved. This will cost money, and a portion of these costs would be passed on to consumers. According to a McGraw-Hill survey, businesses in the Bay Area will invest \$635 million in new plant and equipment in 1977. It is expected that \$44 million or 7 percent of this investment will be in pollution abatement equipment. Historically, pollution abatement expenditures by business and industry have represented 2 percent of total capital investment. However, pollution abatement costs began to increase in 1972, peaking at more than 10 percent of business investment in 1975. Since 1975, the ratio of pollution control costs to total capital investment has been declining. Studies by Chase Econometrics as well as McGraw-Hill suggest that the ratio will continue to decline until a new equilibrium or long-term average is achieved. Based on these studies it is estimated that in the future pollution control expenditures will represent about 4 percent of total business investment.

These investments in pollution control would use money that would otherwise be invested in other sectors of the economy. For example, housing investment could be affected. However, in California the savings and loan network is strong, and this should continue to provide substantial funds for housing. Reductions in other investments as a result of new pollution controls can be expected to be spread over the economy with minimal effects on any given sector.

Cleaner waters will benefit the region. If a commercial oyster fishery were established it is estimated to be worth \$20 to \$25 million per year. Present industrial processes, generally, make it cheaper to pollute than to prevent or clean up pollution. The added costs of pollution control would therefore be expected to increase at least certain consumer prices. At the same time some new technologies developed for pollution control have created greater overall efficiencies. In the long run this may mean decreases in production costs. Clearly those industries that perfect technologies reducing pollution and increasing efficiencies would obtain a considerable market advantage over other industries that do not.

Would Bay Area industries experience a competitive disadvantage relative to industries in other areas as a result of this plan? For example, if air quality is worse on the west coast than elsewhere will Bay Area industries be required to adopt more stringent controls in cleaning up our air? The primary sector of our economy that could be so affected is manufacturing, since more than 50 percent of money spent for pollution control occurs in this sector. The overall economy of the Bay Area is strong relative to most other regions, and considerable new growth is expected in the electronics and aerospace industries, finance and insurance and government which would not be much affected by the recommendations of the plan. However, the effect on manufacturing remains a problem and must be considered in making decisions about this plan. Industry would be encouraged to work more closely with local governments in locating new facilities in areas close to existing housing and transit and where basic sewer and water services are available. Industry would also be encouraged to work with its employees to provide opportunities for increased carpooling and bicycle commuting. At the same time local governments would need to be more sensitive to the locational criteria of private industry in making adequate land available for plant expansions and new facilities. Working collectively, local governments in the Bay Area would urge State and Federal governments to develop tax mechanisms that permit industry to locate in existing urban areas without shouldering higher development costs that may be associated with them.

One area that would require constant attention in the continuing Planning Process is the application of air quality regulations. Because of present conditions, it appears that any industry that produces substantial hydrocarbon or particulate emissions would not be permitted to locate or expand in the Bay Area. This would directly affect petrochemical, auto assembly, and basic raw material conversion industries in the immediate future. A program to develop an industrial location policy while making progress in achieving standards is required by the Clean Air Act Amendments of 1977. It is clear that the Bay Area economy requires some means for permitting new industrial development as a part of its overall planning.

What Does This Mean For State and Regional Agencies?

The existing responsibilities of State and regional agencies are recognized. The plan enables local governments to make a clear statement to State and Regional agencies about what they consider to be workable approaches to environmental problems. The work to date in preparing this document has relied heavily on coordination among agencies responsible for environmental quality. Staff from the Bay Area Air Pollution Control District, the Metropolitan Transportation Commission, and the Regional Water Quality Control Board participated directly in preparing the plan. The California Air Resources Board and the California Department of Transportation provided staff assistance. In some instances elected officials who serve on the policy bodies of regional agencies have actively participated in the Environmental Management Task Force. The plan illustrates that regionwide environmental planning can be done in this manner. Each agency has developed technically competent staff in specific areas; each agency has considerable experience in planning, regulation and implementation of specific environmental quality efforts; and each agency has statutory authority for specific plans and responsibilities to maintain them. For these reasons this plan makes no recommendations to consolidate agencies or functions, although some legislation is needed, no major actions are recommended.

What had been lacking prior to the Environmental Management Plan was a means of coordinating relevant agency actions in systematic fashion. The plan has provided that focus and proposes to continue the current arrangement for up to two years. The problems of the environment are substantial. To meet the challenge, formal agreements are required for the immediate future. In general, the plan calls for a series of such arrangements among the relevant agencies. The specific recommendations are described in the individual management plan chapters and in the chapter on the continuing planning process.

The plan spells out specific actions to be taken by individual agencies. ABAG would continue as a coordinating agency responsible for preparing annual updates of the plan and assessing progress and effects of the plan over time. New regional coordination is recommended in the areas of water quality research and water supply planning because no existing agency has all-inclusive responsibility in these areas at present. At the same time the plan recommends that the Bay Conservation and Development Commission be given primary responsibility for monitoring oil spill cleanup and prevention. Such activities are currently scattered among a variety of different agencies with no clear cut authority.

In addition, regional agencies would cooperate in the coordination of permits for solid waste facilities. What is proposed is a new method for coordinating permit reviews to reduce both time and uncertainty for the applicant.

Regional agencies and local governments would also work closely in the implementation of the objectives for compact growth and transportation improvements. Growth is particularly affected by the timing and construction of new or modified improvements in wastewater treatment, water supply and transportation facilities. Agreement on coordinating these facilities can affect the timing and location of new residential and industrial facilities.

Consistent policies among local governments and regional and State agencies will provide developers with greater certainty about where and when new areas can be opened for development.

Local governments and regional agencies must work closely to assure that the needs of both existing and new populations can be served in a timely manner, and that no unnecessary services in one area be provided thereby limiting funds for needed services in another area. This coordination may mean a reduction in costs for all public agencies involved.

What Does This Mean For Citizens of the Bay Area?

Air pollution can have deleterious effects--sometimes very serious effects--on health.

- Photochemical oxidants cause irritation of mucous membrane in eyes and nasal passages, increased fluid in the lungs, coughing, rapid pulse rate, lowered blood pressure, asthma attacks, and overall decrease in performance.
- Photochemical oxidants also cause respiratory distress in healthy people, especially children, including sore throats, headaches and difficult breathing.
- Short-term oxidant exposure has been associated with aggravation of existing disease.

Air pollution also affects plant life. Biological effects occur not only in individual plants but also in plant communities and entire ecosystems. The implications of oxidant exposure to agricultural crops are rather dramatic.

- Certain crops are no longer grown in the Bay Area because of air pollution. Among these crops are head lettuce, romaine lettuce, endive, snap dragons and chrysanthemums.
- Estimated loss to cut flower growers in the Bay Area in 1970 was approximately \$1 million.
- Available data would suggest annual agricultural damage in the Bay Area from oxidant air pollution reaches several million dollars a year.

Just as with humans and plant life, air pollution can have negative effects on man-made materials. The cost of such damage takes two forms. There is the cost to the producer who must take preventative measures to protect products from ozone damage. There is also the cost to consumers. The consumer pays for such damage with higher product costs and through early replacement of materials such as carpets, drapes and clothing.

By improving air quality these effects can be minimized. In addition, there are other expected benefits. Improving air quality should result in fewer illnesses for workers, thereby increasing productivity and lowering medical costs. By improving crop yields, agricultural lands should become more profitable, and crops now grown outside the region may again be grown in the Bay Area. Improved yields would increase the value of agricultural land. This may decrease pressure on the land for other purposes.

The benefits of improved water quality would be substantial:

- 400,000 clamming days a year from reestablished shellfishing harvesting in San Francisco Bay. (This means that almost half a million people could spend a day clamming each year.)
- Cleaner streets brought about by expanded programs to reduce pollution from surface runoff.
- Greater recreational opportunities in freshwater lakes where siltation is reduced through erosion controls.
- Reduced health risks associated with shellfish harvesting.

Benefits from solid waste programs would be:

- Control of health hazards and nuisances from landfill sites.
- Reduced drain on natural resources through resource recovery programs.
- Assurances most hazardous wastes will be safely disposed or recycled.

Citizens of the Bay Area benefit most from a clean environment, but to achieve that advantage means substantial costs. The region's economy is complex and it is not possible to measure how the economy will react in all circumstances. Consequently, not all costs can be expressed in dollar values.

At least a portion of the costs of cleaning up industrial pollution would be passed on to consumers. A broad range of items such as paints, dry cleaning and plastics could increase in price, perhaps by as much as 3 percent, as a result of pollution controls. Tax

dollars would pay for public water pollution control facilities, but since the program is already established, taxes are not likely to increase. Property taxes may increase in locations where funds have not been committed to match State and Federal money for this program.

Recommendations for improving solid wastes could increase the time households spend handling trash because separating items would be required. Recommendations for increased use of recycled materials would increase consumer prices marginally because with present technology recycled materials cost more. New technology could be expected to reduce those costs, but these savings would vary depending upon the type of material, processing techniques, and how soon technological improvements are available. On the other hand, if manufacturers make improvements in packaging that reduce the amount of materials used, production costs can be lowered. However, the difference would not be expected to result in markedly lower consumer prices.

The plan is expected to have economically negative effects on minorities and low income residents, although people are expected to benefit significantly from a cleaner environment.

Costs borne by local governments in implementing the plan will fall more heavily on persons of low and moderate income due to the regressive nature of property and sales taxes. The plan would also increase certain consumer prices, as noted previously, and even though these increases may be minimal, they would fall more heavily upon people with limited incomes.

The plan is expected to create jobs, particularly in construction, the installation of pollution control equipment, and resource separation and recycling. While others in the region may benefit from these jobs, it is clear that affirmative action and skill training programs are essential for minorities if they are to share in the economic benefits of environmental management.

Studies indicate that the worst health effects of a polluted environment fall on low income groups in central cities. Consequently, respiratory ailments and a higher incidence of lead in the blood of children occur with greater frequency among minorities and the poor who tend to live in central cities. Similarly, water pollution more limited income who can less easily get outside the urban area. The plan would reduce these health hazards and improve the recreational opportunities for low-income and minority residents.

The plan can bring about energy savings. The inspection and maintenance program recommended could save as much as 10,000,000 gallons of gasoline or 24,000 barrels of oil per year. New engine technologies could eventually produce as much as a 50 percent improvement in vehicle mileage, which in turn could mean annual energy savings of millions of barrels of oil and several millions of dollars.

Recommendations for transportation and land use management could reduce vehicle miles traveled by as much as 11 percent, as well as reduce residential space heating and cooling requirements. Translated, this means energy savings of 3,500,000 barrels of oil per year in reduced gasoline consumption and 170,000 equivalent barrels of oil per year in reduced natural gas consumption by the year 2000. At 60 cents per gallon of gasoline, regional savings annually would reach \$88,200,000. Clearly, as energy prices increase, savings increase.

In some instances, recommended transportation and land use management recommendations might decrease the reliance by some families on two automobiles.

A major concern of many has been proposals for land use management to bring about a more compact growth for the region. Simply put, people in smaller cities do not want their communities to duplicate San Francisco, while San Francisco have been concerned for some time that their neighborhoods not become another Manhattan. Neither change is recommended by this plan. The recommendations for more compact development are an attempt to relieve the worst problems caused by sprawl. They describe measures for a more rational use of diminishing land resources and actions that local governments can take to first develop areas already served by streets and sewers before "leap frogging" to outside areas. If these actions could be implemented by local governments, new development would average 5.9 units per net acre. This compares favorably with development patterns in existing areas such as Pleasant Hill, Larkspur and Cupertino. And other cities which are generally not considered densely developed such as Menlo Park and Petaluma have densities greater than what is proposed. Higher densities than these would not be necessary to meet a regional goal for compact growth.

Perhaps the most critical area needing constant attention in the continuing planning process is the cost of producing housing. It is argued by different groups that more dense development patterns either will raise or lower the price of housing. Housing is a complex industry, and a variety of factors are affected by changes in the development process. If "leap frog" development is discouraged, land costs may increase, as the land closer to city centers is already more costly and may increase in value with increased demand. In addition, center city land is usually more difficult to assemble because of multiple ownership. Similarly, construction costs are generally higher on smaller, more difficult to build on sites than on large, open parcels, but these costs vary depending upon the type of unit constructed. Multi-family or town house construction generally costs less per unit than single family construction. As noted earlier overall development costs in areas with existing water and sewer services and local streets are less than in areas needing these new services.

Another factor affecting housing cost is consumer acceptance. The housing industry reports increased interest in condominium and townhouse developments. Demographic trends suggest that smaller units will be in greater demand, as there will tend to be smaller households. At the same time there continues to be considerable market demand for single-family units. At present the lower priced single-family units tend to be built in the fringe areas where large open tracts are available at lower prices. As long as commuting remains relatively inexpensive (cheap fuel, available freeways) these units will continue to be in demand as families are able to secure a desirable home at modest price and afford the necessary commute from outlying areas to job centers.

Another factor is rehabilitation of our existing housing stock. The recommendations for land use management coupled with increased energy costs are likely to increase interest in refurbishing older homes. If these recommendations are adopted by local governments, a reasonable estimate might be as many as 320,000 units that would be rehabilitated by the year 2000. As many as 100,000 units, located in urban centers, could be rebuilt at higher densities, with possibly another 48,000 new units built on scattered bypassed vacant (infilled) lots. Rehabilitation is one good response for the region as only 30.4 percent of the 1970 inventory is thirty years or more old. Timely investment in its upkeep could substantially reduce the need for more costly new construction later on.

If the measures for compact growth are adopted, both additional savings and increased costs for housing could be expected in different parts of the region. Cost changes would depend on specific financial factors accompanying each new development. No simple assessment of these costs is possible for the region as a whole. In recent years new housing costs have risen dramatically throughout the region for a variety of reasons, including rising land prices, increased profit ratios, more expensive materials, and greater demand. These factors promise to continue to increase the cost of new housing construction in the foreseeable future, whether the plan is adopted or not. Nevertheless, because the costs of housing as they relate to compact growth are of vital importance, further staff assessment of them has been initiated and will be available prior to public meetings and official approvals of the plan. These factors would also be important to the continuing planning process and be regularly reviewed as part of updating the plan.

The plan will have effects on employment, but these effects are not nearly as great as the effect of all other factors that influence employment. The region now has approximately 2 million jobs. By the end of this century it is projected that without this plan there will be between 2.6 million and 2.9 million jobs, corresponding to populations of either 5.4 or 6.1 million people, respectively. This amount to between 500,000 and 800,000 more jobs. Put another way, between 11 and 13 million more person-years of employment are projected to occur whether or not the plan is implemented. (A person year means one person working fulltime for one year.)

Some of the actions recommended would create jobs. Other actions would result in fewer jobs being created. On the positive side the plan adds up to this: 120,000 person years of additional employment would be for temporary employment, primarily in construction. The other 62,000 person-years would be permanent employment, that is, 5,000 new permanent jobs. Most of the permanent new jobs would be for maintenance and operation of pollution control equipment and facilities.

The employment created by the plan can be compared with what is estimated to occur without this plan. The person-years of employment created by the plan is about one percent of the person-years of employment that would occur without the plan. The increase in permanent jobs would be about one-half percent of the number expected by the year 2000 without the plan.

On the negative side, the plan includes recommendations that would result in fewer jobs being created than would be the case without this plan. The recommendation with the greatest direct effect is the air quality recommendation for "new source review". This recommendation continues review of industrial expansion and, in some cases, would prohibit certain industries with significant emissions. Most new industries would not be affected. Those industries probably would be: petrochemicals, primary metals, and transportation equipment (e.g., automobile or truck production).

For this analysis, it has been assumed that industries not allowed by this plan in this region would be permitted elsewhere. If this were so, approximately 43,000 jobs would not be created. This equals 500,000 person-years of employment. The estimate is probably high because, in fact, industries denied permits in the Bay Area would not necessarily be allowed elsewhere. Therefore, there could be greater pressure to work out ways of allowing such industries in this region. One possibility is "emission off-sets," an approach discussed in the air quality plan. It amounts to reducing emissions from other industrial or commercial sources more than would be otherwise required. These reductions would be used to "off-set" the emissions from the new source. The new source could then be allowed without the region incurring a net increase in emissions. Whether the off-set policy results in fewer jobs being created or an actual loss in jobs depends on two things: how many jobs would be created as a result of the new industry allowed to locate in the region, and how many jobs would be lost (if any) by the application of off-set policy might be viewed as tending to reduce employment or reduce job creation. Outright prohibition of industry, however, and the total loss of jobs created by that industry, would be more serious. Because off-set is a possibility, the estimate that approximately 43,000 fewer jobs would be created as a result of the continued application of the new source review rule is probably high.

Other recommendations may have indirect effects that amount to fewer jobs being created or to an actual loss of existing jobs. Most notable are the recommendations for more air and water pollution controls on industry. However, these recommended controls are essentially the same as those that would be required nationwide. So it is by no means clear that these recommendations cause a net change in Bay Area employment. Furthermore, national studies indicate that the overall effect of pollution control has been to increase employment. Therefore, in keeping this plan

in perspective, it is estimated that without this plan the Bay Area would experience about a 31 percent growth in jobs between now and the year 2000. With the plan the growth could be expected to be about 30 percent.

Direct Cost of Carrying Out the Recommendations

The direct costs of the recommended measures are shown in the table on the following page. The plan incorporates recommendations included in other planning programs--for example, carrying out the countywide solid waste management plans for the nine counties. Many of those recommended actions would very likely be carried out regardless of the actions taken on this plan. What is shown in the table is an estimate of the overall costs of environmental improvement activities--for actions incorporated in the plan and for actions directly attributable to the plan.

There are several important factors to be considered in interpreting the numbers shown in the table:

- The costs include capital, operation, maintenance and administrative requirements. They are in 1977 dollars. The figures in the table are the amounts that, if on hand at present, would meet all capital, operation and maintenance, and administrative expenditures through the year 2000 without escalation and assuming that the money could be invested at 6 3/8 percent. The figures are roughly equal to the total cost per year to pay off loans for capital, to operate and maintain facilities and to administer programs.
- Not all costs are local costs. Some will be paid for by State and Federal funds. For example, of the total capital cost for sewerage facilities to serve 6.1 million people--\$2.4 billion--State and Federal grants would pay more than half of these costs.
- The figures in the table represent an estimate of the overall direct cost of carrying out the recommended actions. The totals shown in this table eliminate duplication of costs that are shown in the plan tables for Chapters III through VI.

As readers review the costs in the plan tables in Chapters III through VI, it is important to note in this chapter that the costs shown in the individual tables of those chapters should not be added. Here are three examples that show why:

THE ESTIMATED DIRECT COSTS OF CARRYING OUT THE PLAN

<u>PLAN RECOMMENDATIONS</u>	<u>ESTIMATED COST</u>	<u>NOTES</u>
<u>Water Quality</u>		
Existing municipal sewerage facility construction program	\$180-240 million/year	The range shown is to account for whether projects serve 5.4 million or 6.1 million by the year 2000.
Industrial wastewater construction program	\$25 million/year	
Surface runoff control programs	\$250,000/year	Figure shown does not include costs for existing activities that reduce runoff pollution.
Other actions recommended	\$5.5 million/year	
<u>Water Supply</u>		
Water conservation programs	\$5.2 million/year	
Wastewater reclamation programs	\$10.2 million/year	Some costs included in municipal wastewater construction program.
New water supply development projects	\$0-15 million/year	Range is to account for uncertainty of need for five major water projects. If all were built, the cost is estimated at \$15 million annually.
<u>Solid Waste</u>		
Carrying out the county plans (including existing garbage collection programs)	\$215 million/year	Existing serves and planned projects/programs of county plans are included in the figure shown.
Other mandated activities of Federal, State, regional and local agencies	\$3.6 million/year	These include existing administrative, regulatory, planning and operational programs.
New actions recommended	\$900,000/year	Includes updating the plans, coordinating activities, developing markets, advocacy, integrating solid waste programs with air and water quality programs.
<u>Air Quality</u>		
Stationary source control programs	\$30 million/year	
Mobile source control programs	\$50 million/year	
Transportation/land use programs	\$20 million/year	Bridge tolls and parking fees are costs that are the revenues to support local transit service improvements recommended by the plan.

1. Costs of carrying out actions 1 and 2 of the air quality plan are shown in the tables. These same costs are, however, included in the total shown for action 3. Therefore, any attempt to add up the three figures would overstate the cost of the three actions by the sum of the costs of carrying out actions 1 and 2.
2. Costs of wastewater treatment projects in the water quality plan cover the same costs shown in the solid waste plan for facilities to handle the volume of sludge produced at the treatment plants. Any attempt to add the costs of the individual plan tables would overstate the cost of carrying out the plan by approximately \$46 million/year.
3. Bridge tolls and parking fees included in the air quality plan produce revenues that would be used by the Metropolitan Transportation Commission to pay for transit service improvements called for by the same plan. Any attempt to add the costs shown in the individual plan tables would overstate the costs of the plan by approximately \$19 million/year.

With these factors in mind, the overall cost of implementing the Environmental Management Plan is estimated to range from \$535 million/year to about \$620 million/year, depending on factors such as which water storage projects are build, and which level of population is to be served by the wastewater treatment projects. The total includes public as well as private costs.

WATER QUALITY MANAGEMENT

PLAN RECOMMENDATIONS

The recommended water quality management plan consists of an overall water quality management strategy divided into five control elements or action plans. The overall strategy consists of a list of planning principles or policies that will guide water quality management actions in the future. This strategy ensures that effort and funds are expended on those controls that result in the greatest environmental benefit at the least social and monetary cost. Within the five action plans, individual policies are accompanied by a set of implementing actions which describe how water quality in general should be managed and how municipal discharges, industrial discharges, surface runoff and a number of miscellaneous sources of pollutants can be controlled.

The following is a narrative of the recommended plan.

WATER QUALITY MANAGEMENT ELEMENT

Policy 1. Improve understanding of the Bay-Delta system and the fate and effects of pollutants entering it.

When most pollution control actions were directed at the most obvious pollution problems, understanding of the bay system was not an essential prerequisite to action. Now that the more subtle or insidious effects are to be tackled, a good understanding of the bay system is imperative. This is of particular importance with regard to the need or otherwise for programs of strict surface runoff controls and pretreatment of industrial wastes discharged to the municipal sewer.

Actions

The establishment of a San Francisco Bay Delta Research Program (SFBDRP) is recommended. SFBDRP would have two principal purposes: the conduct of goal-oriented research programs designed to answer those questions crucial to the refinement of water quality objectives that will protect the bay and the monitoring of the bay to determine the effectiveness of existing pollution control programs. Early research goals of the program will be development of improved requirements for toxic discharges and delta outflow quality and quantity.

Although millions of dollars are spent each year on monitoring the bay by numerous organizations, there is no established procedure for coordinating monitoring programs or translating monitoring results into action. At the present time dischargers are required to conduct self-monitoring programs to measure the performance of their treatment plants and to monitor the response of the environment to their discharges. The recommended action would transfer responsibility for the latter to the SFBDRP. The action will result in several significant advantages. Monitoring and analysis of samples would be conducted by a full-time staff of technical specialists rather than as an occasional task performed by consultants or discharger's staff with other prime responsibilities. Thus, results will be more accurate and credible and will provide a sounder basis for revising water quality objectives. In addition, the monitoring program can be designed as an integrated whole and effort can be focused more readily on those areas or problems of most concern.

Actions are also recommended to improve the management of data gathered and make it more accessible to concerned citizens or other users. Annual reports will be prepared, summarizing research and monitoring results, which will serve as an input to the plan updating process.

The activities of SFBDRP will be directed by a governing body containing representatives of the dischargers and agencies concerned with protection of water quality and aquatic life.

Policy 2. Establish continuing planning process for water quality management.

The water quality objectives for the region are the keystone of water quality management. They are not unchanging, however. Changes may be necessary for several reasons. New information on the effects of pollutants on the waters of the region may allow the existing objectives to be refined or may require that new objectives be added to protect against presently unforeseen threats to water quality. It may be necessary to revise the objectives to make them consistent with other regional goals. Likewise it may be necessary to modify the existing implementation plan to meet the changed objectives.

Actions

The adoption by EMTF of water quality objectives for the region and certain other portions of the existing water quality control or basin plan is recommended as a first step toward establishing the continuing planning process for water quality. This action together with the Regional Water Quality Control Board's adoption of this plan will make this plan the single guiding instrument for water quality management. The water quality objectives and the beneficial uses they are designed to protect are included in their entirety in Section . They are identical to those presently adopted by the Regional Board.

It is recommended that the State Water Resources Control Board establish an interim standard for delta outflow that will ensure that sufficient winter time flood flows enter the bay. Once established the interim standard would be adopted by EMTF and the Regional Water Quality Control Board as part of this water quality management plan.

Updating of the plan at annual intervals is recommended. Plan revisions will be prepared by ABAG and Regional Water Quality Control Board staff. Between formal plan updates interim changes can be made based on Regional Board and Environmental Management Task Force approval only. It is recommended that a memorandum of agreement be signed by ABAG and the Regional Board defining the plan update procedures and the role of each organization.

Policy 3. Reestablish recreational and commercial shellfish harvesting in San Francisco Bay.

One of the major benefits of cleaning up San Francisco Bay could be the reestablishment of recreational and commercial shellfishing. Actions designed to reduce pollutant emissions to surface waters that might contaminate shellfish are included under other policies. The necessary administrative and regulatory actions are described here.

Actions

It is recommended that the State Department of Health conduct a sanitary survey of shellfish beds in the bay at an early date. Apparently safe beds could be opened for recreational harvesting subject to continual State and local health department monitoring. An agreement between the State Department of Health and the State Department of Fish and Game is recommended that would define the arrangements for patrolling unapproved beds. It is recommended that the Department of Health establish criteria for the type and number of pilot studies necessary prior to permitting commercial harvesting.

Policy 4. Ensure that water pollution control facilities or measures effectively protect water quality.

When the present program of treatment plant construction is completed, the emphasis in water quality management will shift from construction to operation.

If the investment in pollution control facilities or measures is to be worthwhile, they must do the job they were designed for. In addition, we must ensure that water quality is indeed protected.

Actions

The actions recommended to put this policy into effect are of two types; monitoring actions and information-sharing actions. As at present the Regional Water Quality Control Board will require that municipal and industrial dischargers monitor the quality of their effluent. The response of the environment to the discharge will be monitored by SFBDRP. The actions necessary to ensure that surface runoff controls are effective are described in the individual county surface runoff plans.

The information-sharing actions include coordination of treatment plant and other operating personnel training programs and establishment of a clearinghouse for technical exchanges, personnel needs, etc.

MUNICIPAL FACILITIES ELEMENT

Policy 5. Provide facilities needed for municipal sewerage service and water quality protection.

Municipal wastewater facilities should be provided to dispose of wastewater from homes and businesses without posing a threat to public health, welfare or the environment. Facilities should be sized to serve that level of growth consistent with regional goals.

Actions

The construction of new or the expansion of existing wastewater facilities necessary to further the above policy is recommended. The facilities needed over the next 20 years are shown in Appendix B. The treatment levels required before discharge are the same as those currently required by State and Federal law; these levels of treatment adequately protect the receiving waters. Discharges will continue to be regulated using the National Pollutant Discharge Elimination System (NPDES) or permit program administered by the Regional Water Quality Control Board.

Every year the twenty-year list of needed facilities will be updated by ABAG and the Regional Water Quality Control Board in consultation with the dischargers.

An undetermined percentage of the capital cost of facility construction will be supported by State and Federal grants.

Policy 6. Encourage consolidation of treatment facilities and discharge of wastewater to well-mixed areas of the receiving waters.

Most of the decisions affecting the consolidation of treatment facilities and the location of discharge sites have been made. A major factor in these earlier decisions was the desire of the sewerage agencies to maximize the use of existing facilities. As facilities wear out and need to be replaced or modified the earlier decisions must be re-examined. Opportunities to move discharges to less environmentally sensitive areas and to consolidate treatment should be taken. Consolidation of treatment facilities can save money and usually leads to better operational reliability.

Action

All plans for proposed new facilities or facilities modifications will be reviewed for consistency with the above policy. Projects determined to be inconsistent will not be included on the twenty-year project list and thus will not be eligible for State and Federal grants.

Policy 7. Accelerate progress toward wastewater reclamation and reuse.

Actions to implement this policy are described in the Water Supply Management Plan.

SURFACE RUNOFF ELEMENT

Policy 8. Establish a program of surface runoff controls that emphasizes low-cost measures to reduce the pollutant load from this source.

As discussed previously evidence exists that surface runoff may be contributing significantly to the regions' remaining water quality problems. Because the evidence is inconclusive, a major investment in surface runoff controls is not justified at this time. However a minimal level of control requiring little investment of funds and representing no more than good urban "housekeeping" (best management practices) is recommended. The actions needed to further this policy are contained in the individual county surface runoff plans included in an appendix. A summary description is included below.

Actions

The main emphasis in the county plans is on development of control measures to reduce the accumulation of pollutants prior to runoff, establishment of education programs and monitoring to better define runoff-related water quality problems and the effectiveness of controls. The most common recommended actions include:

- o improve street sweeping. Includes revision of street sweeping schedules to concentrate effort just before and during the rainy season. Other techniques include instituting parking regulations to allow sweepers access to curb area, training street sweeper operators to increase pick-up of fine particles (which contain a high percentage of pollutants), and further studying existing street sweeping practices for future modifications as part of the continuing planning process.
- o control use of certain chemicals. Recommendations range from regulating pesticide usage to educating home users of chemicals.
- o clean stormwater collection system. This control measure includes recommendations ranging from improving cleaning of catch basins and storm drains to cleaning open channels.
- o control dumping. Recommendations include oil recycling programs, enforcement of existing anti-dumping ordinances, drafting watercourse protection ordinances and neighborhood composting programs.

- o develop anti-littering program. Recommendations include public information programs, placement of litter receptacles and strict enforcement of ordinances.
- o control erosion. Recommendations include increasing enforcement of existing ordinances, drafting additional requirements where needed, stabilizing stream banks and requiring erosion control considerations in environmental impact reports and project review guidelines.
- o establish water quality monitoring program. All counties saw the need to further sample water quality to better define existing problems and measure the effectiveness of control measures.
- o establish public education/information program. It was concluded that the public generally lacks awareness of the relationship between polluting substances and their impact on water quality. All counties therefore suggested various forms of educational programs.
- o establish procedures for continuing planning. Recommendations included establishing surface runoff coordinating bodies in the counties, documenting control measure practices and their effectiveness and making recommendations for annual revisions, and determining financing mechanisms for annual work programs.

Most counties see a need to undertake demonstration projects which will determine the cost and effectiveness of certain control measures. In addition most counties identified several tasks which would be best accomplished by ABAG at the regional level including:

- o *Continued Management of the Surface Runoff Program:* The plan recommends that the present structure of the Surface Runoff Management Program be maintained. In the face of this program's complexity, the continuation of the existing structure will facilitate communication between Federal, State and local agencies as they implement the plans.
- o *Coordination of Data Gathering:* The plan recommends that ABAG coordinate the gathering of baseline data for problem identification. In the plan development process it was recognized that water quality and quantity data are collected by many organizations.

Currently, much data collection proceeds without the clear understanding of what information is required for management-level decisions. SFBDRP could assist in coordinating data gathering and storage, analysis and dissemination. This will reduce duplication of effort, provide central data storage, and make the data readily available.

- o *Technical Information Exchange:* Water quality data is not the only type of information which is required for water quality management. Other information includes cost and effectiveness of control measures. The plan recommends that ABAG collect and disseminate this technical information for the counties in the continuing planning process.
- o *Preparation of Model Ordinances:* This plan recommends that ABAG assist the counties in developing model ordinances for control of surface runoff-related problems. Specific model ordinances which have been requested by the counties are: erosion control, range management, performance standards for sensitive lands, streambank protection, litter ordinances and recycling controls.
- o *Educational Programs:* The counties recognize that a public education program regarding surface runoff pollution and its sources would be desirable. To avoid duplication of effort, it was felt that a regional approach would be appropriate. Specific educational proposals include multi-media presentations and elementary and secondary education curricula.
- o *Provide Regional Environmental Perspective on State Legislation:* The plan calls for ABAG to continue to act on behalf of citizens of the Bay Area with respect to environmental questions affecting the region, especially as it relates to the surface runoff problem.

The following paragraphs summarize each county plan.

Alameda -- The intent of Alameda County's plan is to organize the collective efforts within the county to reach balanced solutions to its pollution problem. Surface water quality investigations conducted by the county since 1972 and the recent 208 investigations of urban storm-water runoff have verified the existence of substantial and widespread pollution of local interior waters.

To establish a process to manage these sources, recommend Best Management Practices (BMP's, i.e., non-structural source control measures) include: education programs, street cleaning, drainage system cleaning,

litter and oil control and revisions of existing erosion control ordinances. In general, these BMP's are existing activities augmented by improvements of existing hygiene services. On agricultural lands, additional investigations with the agriculture agencies are recommended (by the Corps of Engineers) to develop land management plans to investigate erosion problems.

Documentation of existing service levels indicates that surface runoff control expenditures annually exceed \$4.7 million. Indications suggest that there is an interrelation between expenditure levels and effectiveness of surface runoff controls. The plan notes that these existing service levels are likely to be cutback due to budgetary pressures. However, the maintenance of existing service levels or even existing budget levels is strongly recommended.

Contra Costa -- This plan points out that many existing projects, programs, ordinances and regulations may be better designed to protect the quality of surface waters and the capacity of reservoirs in the county. The purpose of the control measures selected for implementation is to incorporate water quality considerations into the decision-making process to a greater extent than in the past. This will be accomplished by inclusion of water quality considerations in environmental impact review processes, design review guidelines and conditions of approval for construction projects, and as a guideline for selection of alternative plans for flood control and drainage work, road design, and other public projects, including maintenance programs. This will result in a higher level of awareness of the water quality implications of governmental actions. The need for public awareness will be met through a region-wide public education program.

Marin -- The Marin County plan notes the high level of effort already expended by cities, special districts and the county on surface runoff pollution control. The plan recommendations for initial implementation are directed more towards bringing about uniform application and increased efficiency of existing measures rather than creating new programs. The Marin County plan recommends:

- o The continuation and possible improvement of existing drainage system cleaning programs
- o The concentration of street sweeping efforts in highly contaminated areas and the establishment of sweeper schedule related parking restrictions
- o Greater emphasis on compliance with and enforcement of erosion control requirements at construction sites

In addition, the Plan recommends certain preventive measures such as a public information program and the adoption of strict runoff standards for all new developments within domestic water supply watersheds.

Napa -- Napa County's Plan calls for continuation of ongoing water quality sampling programs such as the existing Baseline Study, with added goals to include locating boron sources in the Calistoga area. A special sampling program will seek the sources of high coliform counts in Conn Creek. The county, cities and the Resource Conservation District will review existing practices for low or no cost opportunities to reduce pollutants. Examples include temporary sediment traps at construction sites, rescheduled street sweeping for fall leaf pickup and pasture management to reduce overgrazing. The existing practice of notifying property owners to remove illegally dumped refuse from watercourses will be reviewed for effectiveness, and additional controls will be implemented if necessary.

San Francisco -- Unlike other communities in the Bay Area the City and County of San Francisco has a combined sewer system which collects both sanitary waste and approximately 95-percent of surface runoff. During periods of rainfall flows exceed the capacity of the system; untreated wastewater overflows into natural channels and the bay at 39 locations around the periphery of the city. Overflows occur an average of 82 times a year. The adverse effects of overflows on beaches and receiving waters persist for about one-third of the year.

In response to Regional Water Quality Control Board requirements the city has developed a wastewater management master plan which will make untreated wastewater overflows a rare occurrence. The master plan concept is one of an integrated and balanced system of treatment, storage/transport and pumping facilities. The design is complete for an expanded treatment plant on the Bay side of the city to provide for secondary treatment of dry weather flows. Construction contracts are being advertised in late 1977 and early 1978. The construction of the system to transport dry weather flow from the northeast area of the city to the new southeast plant is nearly completed. Facility planning is underway for a new secondary plant to treat all dry weather flows from the west side of the city. Included in this investigation is the planning for wet weather treatment facilities as well as an investigation of the requirements and potential for wastewater reclamation. A system of transport/storage structures will collect and store surface runoff together with domestic wastes until treatment can be provided at treatment plants. Contracts have been awarded for six major wet weather transport/storage and pumping facilities for the west side of the city. A new deep water outfall is under design and facility planning for the remainder of the west side facility is under way.

When the plan is fully implemented surface runoff will be treated and discharged to the ocean through long submarine outfall.

San Mateo -- The San Mateo County Surface Runoff Management Plan was prepared under the policy guidance of local cities, districts and citizens. The study concluded surface water runoff is not a major problem for water quality in this county. Most of the waters in the County are in good condition due to wise watershed planning, massive sewage discharge cleanup, and other existing public works and planning services.

The study did find, however, that surface runoff can carry materials into our waters which are either unattractive or not particularly good for our waters or the life they support. But while the possible sources of water

pollution are widespread, specific water quality problems were harder to identify and seem to occur in small or isolated locations. Importantly, the sources of runoff pollution also contribute to other problems which are already costing the County for cleanup or abatement services. These problems include aesthetic degradation, inadequate drainage and flooding, and habitats for mosquitoes and rats.

The county's plan outlines a low-cost, five-year program to help reduce some of the sources of these problems, particularly in areas draining to known water quality trouble spots. It stresses public education and prevention, but it also emphasizes working toward more efficient use of present cleanup equipment and existing services and controls. These improvements will be developed from the suggestions of local jurisdictions working together to identify and solve local problems.

Santa Clara -- The primary thrust of this county's surface runoff plan is to continue existing surface runoff control activities. Over \$4.5 million is currently being spent on various programs which mitigate surface runoff pollution, but which have other benefits as their main purpose. These programs will be coordinated to help improve water quality and reduce future pollution.

Within developed areas, street sweeping, storm drain cleaning, and litter control programs are designed to reduce litter and debris problems. Street sweeping also helps to reduce accumulation of heavy metals, such as lead from auto exhaust. Increased efforts to prevent dumping of used oil into storm drains center on public education programs and on establishing and expanding used oil recycling stations.

In both the developed and undeveloped areas of the county, erosion and siltation problems are the major concerns which need to be evaluated further. These problems are to be addressed through the adoption of erosion control ordinances and through preparation of land management plans by local Resource Conservation Districts.

The exact nature and magnitude of most surface runoff problems is still largely unknown. The lack of rainfall, together with other factors, have made it difficult to assess the severity of existing problems. The draft plan supports continued effort to determine more precisely the nature and magnitude of surface runoff pollution problems. Included in this effort is a request for funds to evaluate the changes in quality of surface runoff when detained for various periods in the Palo Alto flood basin.

Finally, the plan recognizes the need for an ongoing local effort to evaluate, update, monitor and improve local implementation. A process is initiated to designate an appropriate local agency as the "surface runoff management coordination agency for Santa Clara County."

Sonoma -- The (1978-1980) initial phase of the Sonoma County plan provides for initiation of practices which would reduce potential and suspected surface runoff problems. The plan includes creation of a Surface Runoff Quality Committee to coordinate education programs regarding polluting materials and preventive actions, to promote interagency cooperation and to disseminate information through areawide mailings and media releases.

Adoption of erosion control, drainage, and litter ordinances are called for in the initial period. Regional assistance from ABAG with education programs and from SFBDRP with surface water quality monitoring is recommended. State and/or Federal funding assistance is recommended for regional activities or where local funds are not available.

If needed, the (1980-1983) continuing planning period specifies actions which would be more costly and would be instituted only if the required level of surface runoff water quality is not achieved by the initial planning period actions.

Solano -- The draft Solano County plan proposes several control measures and programs. These proposals include: the creation of a 208 Surface Runoff Control Office within existing county departments to implement the plan, improved street sweeping activities through updated techniques and a possible monitoring program, a public education program to explain methods used to prevent pollution from home application of pesticides and fertilizers, investigation of an oil recycling program to provide a way for citizens to dispose of used oil, continuation of the current five-year septic tank inspection program, updating or drafting erosion control ordinances for the county and cities, and the encouragement of best use practices for agricultural activities and the adoption of a creekside ordinance to further control erosion and siltation.

These measures will be implemented over a six-year period with most effort occurring in the first two. The County, local affected cities, special districts and other agencies will be responsible for carrying out the plan control measures and programs in coordination with the County 208 Planning Agency and affected regional agencies.

INDUSTRIAL FACILITIES ELEMENT

Policy 9. Provide facilities needed for industrial wastewater treatment and water quality protection.

Industrial wastewater facilities should be provided to dispose of wastewater from industries without posing a threat to public health or welfare, the environment, or in the case of indirect dischargers, to the municipal sewerage system.

Actions

The construction of new or expanded industrial wastewater facilities necessary to further the above policy is recommended. A list of direct industrial dischargers and discussion of the treatment levels they must attain is included in Appendix C. The treatment levels required before direct discharge to the environment are the same as those currently required by State and Federal law; these levels of treatment adequately protect the receiving waters. Direct discharges will continue to be regulated using the National Pollutant Discharge Elimination System (NPDES) permit program administered by the Regional Water Quality Control Board.

The cost of facilities will be borne by private companies. Low interest rate loans for the cost of construction of pollution control facilities are available to industry under certain circumstances.

Industrial dischargers to municipal wastewater systems will be required to pretreat their waste to that degree necessary to allow the municipal plant to meet its discharge requirements, to prevent interference with the treatment processes, and to allow the agricultural use of sewage sludge. Sewerage agencies will be responsible for administering the necessary pretreatment or source control programs. It should be noted that federal regulations on pretreatment are expected to be finalized later this year. Depending on the nature of the regulations the plan may have to be adjusted. .

MISCELLANEOUS SOURCES ELEMENT

Policy 10. Improve wastewater disposal practices in unsewered areas consistent with regionwide development policies.

For many years, the trend has been away from on-lot disposal systems such as septic tanks. In general, this has been a favorable trend because, in most cases, community-owned sewage collection, treatment and disposal facilities provide a safer and more reliable alternative to on-lot systems. Exceptions to this general rule may exist in the more rural parts of the region. The purpose of the policy is to ensure that where on-lot systems are determined to be the most appropriate waste disposal system, they are designed, constructed and maintained in a manner that protects the public health and water quality.

Actions

It is recommended that: the Regional Water Quality Control Board, in conjunction with County Health Departments, establish minimum, region-wide guidelines for the selection, evaluation, design and construction of on-site disposal systems, incorporating the latest scientific information on the subject. Local city and county governments would incorporate these guidelines into their building codes. Those counties which incorporate such standards would be exempt from RWQCB Waste Discharge requirements for the individual on-site systems.

For new housing developments which could use on-site disposal systems (where those systems are technically appropriate), public management of those systems would be required. For existing housing developments having sewerage problems which could be eliminated by proper maintenance of on-site systems, public management would be a permitted option. Public management could be by existing agencies or new and could perform a range of tasks including monitoring, service and repair. Public management eliminates only maintenance-related failures and does not advocate inappropriate location of on-site disposal systems. Where on-site systems are technically or economically inappropriate or do not conform to local land use plan requirements, then sewerage systems should be installed.

In recognition of the desirability of the proposed actions developed for the EMP, the RWQCB on 19 August, 1977 issued proposed policy statements that would lead to the adoption of updated design criteria and public maintenance of new on-site disposal systems.

Policy 11. Monitor effectiveness of existing arrangements for preventing and cleaning up oil and chemical spills.

Responsibility for prevention and clean-up of oil and chemical spills is shared by many agencies. Each agency deals with a part of the problem. Because of the division of responsibility it is difficult for policy makers and the public at large to determine whether present practices are effective.

Actions

The key action is designation of a single agency to provide an overview of existing practices. This agency would monitor the performance of all other agencies dealing with spill prevention and clean-up. An annual report to the EPA Administrator and the Governor would be prepared identifying any problems with existing practices. The agency could act as coordinator for the other agencies dealing with spills if this was determined to be necessary.

Another action recommends the U.S. Coast Guard restudy the possibility of extending high-resolution radar coverage north of the Richmond-San Rafael Bridge as a way of further reducing the possibility of tanker accidents.

The enactment of Federal laws requiring improvements in the standard of construction for tankers is also recommended.

Policy 12. Reduce sewage pollution from small boats in marinas, harbors and environmentally-sensitive areas.

The discharge of raw or poorly treated sewage from small boats causes violations of water quality standards in marinas and harbors. The effects of vessel discharges in open waters are too slight to be detected. However, sewage from vessels can contaminate shellfish beds which is one reason why commercial shellfish harvesting is not permitted in San Francisco Bay.

Actions

Pollution caused by vessels does not appear to be one of the regions more serious environmental problems. Consequently, the main thrust of the recommended actions is enforcement of existing or slightly amended regulations and public education rather than drafting of new regulations.

If in the future, these actions fail to solve the problem, or if new information shows the problem to be more serious than presently supposed, then it may be necessary to take stronger action such as prohibiting any vessel discharges in certain parts of the Bay.

The construction of holding tank pump-out facilities at all marinas and harbors is recommended. A public information program should be initiated to increase boat owners' awareness of problems caused by vessel discharges and the devices available for solving the problem. Boat owners installing flow-through waste treatment type devices should be made aware that possible future regulations could require their replacement with holding tank devices. Water quality monitoring in areas frequented by small boats should be intensified in order to determine the effectiveness of control measures. Although no water quality problems associated with commercial vessels have been identified to date, the monitoring program will be designed to identify such problems if they do, in fact, exist.

WATER SUPPLY MANAGEMENT

PLAN RECOMMENDATIONS

The recommended water conservation, reuse and supply plan consists of a list of principles or policies that will guide water supply planning in the future. Each policy is accompanied by a series of actions designed to implement the policy.

The following is a narrative of the recommended plan.

Policy Provide a safe and reliable water supply to all citizens at a minimum monetary and environmental cost.

This policy simply restates the principle that has guided most of the region's water supply agencies in the past. Compliance with the latter part of the policy "at a minimum monetary and environmental cost" makes interagency cooperation a necessity, a fact that is reflected in the following actions.

Actions

Probably the most important recommendation contained in this plan pertains to the formation of a water management coordinating council (WMCC). The council, which could be organized informally or perhaps formalized by a joint powers agreement, would provide the forum for discussion and possible resolution of issues of mutual interest to agencies concerned with water management. The council will include representatives of both the water and wastewater agencies. Although some of the matters before the council will concern only one or the other type of agency it appears preferable to form a single council rather than two because this better reflects the interrelationships between water supply and wastewater disposal.

Several other actions under this policy recommend studies or planning activities of mutual interest to water agencies that should be undertaken by the WMCC. Recommended studies include an evaluation of the feasibility of increased interagency transfers under both routine and emergency conditions. A reexamination of the desirability of supplying unrestricted water to all consumers, even under the worst conditions which may occur very infrequently, is recommended. The preparation of interagency-coordinated drought contingency plans is recommended.

It is clear that the region will need at least some new water supply facilities in the future. The facilities will include those needed to develop new sources and probably some additional interties between existing systems. Construction of needed facilities is recommended in this plan. The exact nature of the facilities cannot be determined until the drought is over and the WMCC has completed the recommended studies. In order to mobilize local and regional government support for any new construction projects, it is proposed that WMCC keep EMTF informed of progress in water supply planning. EMTF approval of a particular project should improve it's chance for implementation.

Several actions are recommended to prevent future groundwater pollution problems such as saltwater intrusion and high-nitrate levels resulting from septic tank discharges.

Policy Encourage water savings

It is apparent that the least expensive way to progress toward matching water supply and demand is to reduce residential demand to a moderate degree. Clearly it is in the region's interest to do this. More intensive residential water saving and agricultural water conservation are no more costly than development of new sources of water and have few, if any adverse, environmental effects. Both of these options are promising but need further evaluation.

Actions

It is recommended that water agencies establish or continue water savings programs that include residential measures similar to those described earlier as the "moderate" water savings plan. The "moderate" plan encourages retrofit of water saving devices in existing housing and mandates building-in water saving devices in all new construction. Building codes should be updated to include water saving devices over and above those already required by State law. The building industry is already voluntarily installing water saving devices in some areas.

Studies should be conducted under the direction of the WMCC to determine the public acceptability of more stringent residential water saving and the feasibility of agricultural water conservation. More stringent residential water savings might involve restrictions on certain types of landscaping and landscape irrigation methods. Agricultural water saving may be infeasible unless it is part of a statewide program.

Actions are recommended to encourage water saving by providing tax incentives for retrofitting of water saving devices such as low-flush toilets in existing homes and by revising water rate structures that result in lower unit costs to large water users.

Effective water conservation depends on a high level of public awareness of the consequences of wasteful water use. It is recommended that this be maintained at least in part by a regionally coordinated public information program and by annual reporting of progress in the water saving field.

Policy Encourage reuse of wastewater where cost-effective

The unsubsidized cost of reclaimed water is usually higher than the cost of water from new sources. Monetary costs, however, do not take account of the fact that using water twice has a much smaller adverse environmental impact than developing new sources. Federal and State grants are available to pay part of the construction cost of wastewater reclamation and reuse facilities. Because of this subsidy, the local cost of reclaimed water is reduced, making it competitive with other water sources. It appears to be in the region's interest to construct all reclamation projects that will produce water that is price-competitive with other sources.

Actions

It is recommended that the proposed regional wastewater reclamation study be conducted as soon as possible. The study is intended to determine whether large-scale reclamation of Bay Area wastewaters for use by agriculture in the Central Valley is feasible and if any sub-regional reclamation opportunities exist other than those already being pursued by local agencies. A study of this type has been planned for some time and appear likely to commence shortly under the direction of a joint powers agency made up of major water and sewerage agencies and funded in part by the State and Federal through the Clean Water Grants Program. The joint powers agency could form the nucleus of the WMCC.

As noted earlier, State and Federal funds are available to supplement local funds in paying for the cost of construction of wastewater reclamation facilities. It is recommended that priority for grant funding can be given to reclamation projects that produce water that replaces an existing use.

SOLID WASTE MANAGEMENT

PLAN RECOMMENDATIONS

This draft solid waste management plan describes a physical system for managing the Bay Area solid wastes. It also provides a regional approach to solve the basic problem of landfilling wastes and the related regional problems identified in the previous section. The plan in general calls for:

- o Improvement of the existing system of landfilling wastes to ensure public health and safety, to protect environmental quality, and to conserve resources.
- o Support of research and demonstration projects to obtain additional information needed for large-scale resource recovery planning.
- o Advocacy of Federal and State action to support waste reduction and materials and energy recovery.

In the continuing process, a more comprehensive plan will be developed for regional resource conservation and recovery, and hazardous waste management. The plan will be updated annually as necessary information becomes available. It will guide cities and counties on the location and optimal distribution of large-scale resource recovery facilities as they relate to land use, transportation, and other environmental, social and economic effects.

The following is a narrative of the recommended plan.

MUNICIPAL WASTE MANAGEMENT

This part of the plan is primarily based upon a composite of the nine county solid waste management plans and implementation programs. A summary description, including the physical system, administration, operation, and financing, of the county plans is presented in Table 5.

Policy 1: The regional solid waste management plan should primarily be based on the county solid waste management plans, and primary responsibility for adequate solid waste management shall rest with local governments.

Policy 2: Regional solid waste management planning should be coordinated with State and local planning and be an integral part of areawide environmental management planning.

TABLE 5. SUMMARY DESCRIPTION OF COUNTY PLANS

COUNTY	PHYSICAL SYSTEMS			ADMINISTRATION	OPERATION	FINANCING
	Storage and Collection	Transfer and Processing Facilities	Disposal Sites			
Alameda	<ul style="list-style-type: none"> Collection system will continue to operate as it currently does with cities and the county contracting to franchisers as necessary. Ordinances specify standards for management of solid waste; many need revision to address specific problems. 	<ul style="list-style-type: none"> Currently, there are no transfer stations, but several will be constructed. No extensive resource recovery operations will be implemented in the short term. Resource recovery operations may be starting in the short term at the Davis St. transfer station. Volunteer recycling efforts will continue. Berkeley has initiated a comprehensive program of source separation and recycling including composting of garden waste. 	<ul style="list-style-type: none"> In the short term as many as 5 of the 11 existing disposal sites will close, leaving six sites. The county plan recognizes the need to establish new sites. 	<ul style="list-style-type: none"> Joint Powers Agency Solid Waste Management Authority (17 members, 13 cities, 3 cities, 3 districts, and the County) will guide the administration of the plan. County Health Department and the City of Berkeley Health Department will enforce laws and ordinances. 	<ul style="list-style-type: none"> Collection is done by Oakland Scavenger Co., two small collectors, and two municipalities operating their own collection services. Ten of the eleven sites were privately operated in 1975. Six of the ten were also privately owned. Most of the Group 2 and 3 wastes are disposed within the county. 	<ul style="list-style-type: none"> The county plan suggests that further study is needed to determine sources of funds for plan implementation. The estimated costs were: Total capital cost \$86,700,000 New capital required \$67,120,000 Average cost per ton \$41.42
Contra Costa	<ul style="list-style-type: none"> Collection system will continue to operate as it currently does with cities and special districts contracting with franchisers. 	<ul style="list-style-type: none"> Currently, all wastes are hauled directly to landfills where limited processing or resource recovery may occur. Two transfer stations and one community drop box are recommended. Two processing facilities are proposed for Acme and West County landfills; an energy recovery facility is proposed for Central Contra Costa Sanitary District facilities. 	<ul style="list-style-type: none"> No new Class II landfill sites are proposed. One site is scheduled to close in the short term; one other will probably close by 2000. 	<ul style="list-style-type: none"> The County Board of Supervisors is the official management agency, however, it has established the Solid Waste Management Commission for policy decisions It is expected that most of the programs in the plan will be carried out by special districts, cities, & the county. Enforcement will be by the County Health Services' Environmental Health Services Division for health-related standards in all jurisdictions. The Division has been delegated enforcement powers by some cities for solid waste management standards. 	<ul style="list-style-type: none"> Group 2 wastes are collected by 15 franchised waste collectors. Collection of Group 3 wastes is arranged on an ad hoc basis by agreement between the generator and franchise haulers. Currently, all the landfill sites are privately owned and operated. Three of the five sites receive wastes from outside the county. 	<ul style="list-style-type: none"> The county plan did not recommend a particular financing scheme. Several alternatives were recommended for consideration.
Marin	<ul style="list-style-type: none"> Collection services will continue according to existing arrangements with private franchisers. Attempts will be made to make the storage and service standards more uniform. The County, 8 cities and 8 special districts have solid waste ordinances that cover collection, storage, and disposal. All have mandatory collection. 	<ul style="list-style-type: none"> There are currently no transfer stations. The county plan proposed one new transfer station be located in San Rafael. No processing or resource recovery facilities are planned for the short term. 	<ul style="list-style-type: none"> No new sites are anticipated to be needed in the short term. The five sites receiving Marin County wastes will continue to operate in the short term. 	<ul style="list-style-type: none"> A County Solid Waste Manager will be responsible for administering the plan. However funding has not been approved for the position. A Solid Waste Management Committee will be responsible for policy making, public information, reviewing and updating the Plan, and setting standards. Environmental Services Division will be designated as the enforcement agency. 	<ul style="list-style-type: none"> 11 franchise collectors have responsibility for collecting municipal wastes. Ten cities, nine special districts and the county issue franchises. The four sites in Marin county are privately owned. Some Group 2 and 3 wastes from the county are disposed in Contra Costa County. 	<ul style="list-style-type: none"> Capital expenditures occur in the private sector and will be financed through bank loans and leases, and be repaid through user fees and other charges. Administration, policy-making, planning, public information & enforcement must be financed from public funds and franchise fees.
Napa	<ul style="list-style-type: none"> Collection system will continue to operate as it currently does through franchise agreements with private collection companies. The plan recommends adding to ordinances in order to comply with State minimum standards. 	<ul style="list-style-type: none"> Currently, there are no transfer stations. The county plan recommends that the county investigate feasibility of processing facilities. No final recommendations were made on transfer stations. Two general locations for drop box transfer stations were evaluated. 	<ul style="list-style-type: none"> Two of the three landfills have capacity for the long term. One site will be closing in the short term; the operator is investigating possible locations for a new site. 	<ul style="list-style-type: none"> Administration of the county plan will rest with the city councils and the County Board of Supervisors within the unincorporated County. County Division of Environmental Health is the designated enforcement agency. 	<ul style="list-style-type: none"> Group 2 wastes are collected by 4 franchised waste collectors within the 3 franchise zones. Special pickup of wastes can be arranged with the collector. All the landfill sites are privately owned & operated. One landfill site receives wastes from Solano county. 	<ul style="list-style-type: none"> Financing will continue as is with the involved public agencies paying for administration, planning, regulation, and enforcement through public funds and franchise fees.

TABLE 5. SUMMARY DESCRIPTION OF COUNTY PLANS (continued)

COUNTY	PHYSICAL SYSTEMS			ADMINISTRATION	OPERATION	FINANCING
	Storage and Collection	Transfer and Processing Facilities	Disposal Sites			
San Francisco	<ul style="list-style-type: none"> o The Building and Health codes will be revised to require incorporation of solid waste storage in new construction. o No changes in collection practices are proposed. 	<ul style="list-style-type: none"> o A large transfer station is located in the southeast corner of the City. Some processing occurs at the transfer station. o No new transfer stations or processing facilities are planned for the short term. o The County Plan recommends that the feasibility of a resource recovery system be investigated for implementation in the medium term. 	<ul style="list-style-type: none"> o San Francisco does not have its own landfills and will continue to dispose most of its wastes at the Mt. View site. Colma Hillside site will take demolition wastes 	<ul style="list-style-type: none"> o The Department of Public Works has primary responsibility for solid waste management. o The Department of Health will be designated as the enforcement agency. 	<ul style="list-style-type: none"> o Golden Gate Disposal Company and Sunset Scavenger Company are the two licensed refuse collectors that service San Francisco. o There are also 6 debris box operators registered with the Department of Public Works. o The existing transfer station is privately owned and operated. 	<ul style="list-style-type: none"> o Financing in the short term will continue as is. Collection, transfer, & disposal are financed by private industry through service fees & charges. Administration, operation & enforcement are paid out of City General Fund, Gas Taxes, & service fees from refuse collectors.
San Mateo	<ul style="list-style-type: none"> o Collection practices will remain the same. o The plan recommends up-dating the county's and cities' garbage regulations and ordinances. 	<ul style="list-style-type: none"> o By 1980 two new transfer stations will be added to the present system making a total of four in the county. o Recycling operations will include local volunteer projects, activities by private franchisers, and municipally sponsored projects at public rubbish collection points. o A front end materials recovery system will be in operation in San Carlos. o The feasibility of methane gas recovery will be investigated for Ox Mountain. 	<ul style="list-style-type: none"> o By 1980 five disposal sites will have closed. Replacing these will be an expanded system of transfer stations and the Ox Mountain landfill. 	<ul style="list-style-type: none"> o The County Public Works Department has primary responsibility for plan administration. o The County Board of Supervisors will be the lead agency to coordinate planning, implementation, and management. o County Public Health Department has been designated as the enforcement agency. 	<ul style="list-style-type: none"> o Six scavenger companies contract with nineteen cities, five sanitary districts, and the county. o Most Group 2 and 3 wastes go to county landfills. Some residential wastes go to Santa Clara county sites. o A special district, the South County Garbage and Refuse District, operates a landfill facility at Marsh Road. 	<ul style="list-style-type: none"> o A combination of public and private financing will be needed for capital investments. Budgeting responsibility for initial capital investments should be with the local government in whose jurisdiction the facility is located. o The franchised collection of municipal refuse will continue to be paid through user collection fees or service district charges. Municipal collection will come out of the city general fund.
Santa Clara	<ul style="list-style-type: none"> o No changes in collection practices are proposed. o The Plan recommends adoption of statewide minimum standards for solid waste handling and disposal. 	<ul style="list-style-type: none"> o There are two very small privately owned and operated transfer stations. o No new transfer stations are proposed for the short term. o Three processing facilities are suggested for the county. The facilities could be in operation by 1980. 	<ul style="list-style-type: none"> o No new sites are proposed for the short term. o In the short term two of the 15 existing sites will reach capacity. One of these sites is temporarily closed. 	<ul style="list-style-type: none"> o The Solid Waste Planning Committee has primary responsibility for county-wide planning and coordination of solid waste management. o The County Environmental Health Services and Environmental Management Agency enforce health and non-health related ordinances in unincorporated county. o The County Environmental Health Services enforces health related ordinances; in general each city enforces non-health related ordinances. 	<ul style="list-style-type: none"> o Eight collection firms operate in unincorporated county. All municipalities contract or franchise with private collection firms. o Eleven sites are privately operated; two are operated by cities and one by the Navy. o All Group 2 and 3 wastes are disposed within the County. San Mateo transfers some of their wastes to Santa Clara sites. 	<ul style="list-style-type: none"> o Financing for planning and coordination will come out of city and county General Funds. o New facilities will be either privately or publicly financed as self supporting enterprises. o Gate fees will support new processing stations.

TABLE 5. SUMMARY DESCRIPTION OF COUNTY PLANS (continued)

	PHYSICAL SYSTEMS			ADMINISTRATION	OPERATION	FINANCING
	Storage and Collection	Transfer and Processing Facilities	Disposal Sites			
Solano	<ul style="list-style-type: none"> The collection system will continue to operate as it currently does. 	<ul style="list-style-type: none"> There are no existing transfer stations. Limited salvage of metals is practiced at 3 landfills. No new facilities are planned for the short range. 	<ul style="list-style-type: none"> In the short term no new sites are needed; the existing sites will have adequate capacity. Napa County receives Group 2 and 3 wastes from the County. Also Contra Costa receives wastes from Solano. 	<ul style="list-style-type: none"> A program manager will be designated to coordinate enforcement, inspection, planning and administration. The county plan designates the county health department as the enforcement agency. 	<ul style="list-style-type: none"> City of Dixon owns and operates its collection system, the rest of the cities franchise with private companies. There are 7 companies. All of the major sites are privately owned and operated. 3 of the smaller ones are under public ownership. 	<ul style="list-style-type: none"> No capital costs are incurred. Three revenue sources are recommended for administrative costs: direct inspection charges, property taxes, and disposal surcharge on Group 1 wastes.
Sonoma	<ul style="list-style-type: none"> The plan recommends that solid waste collection services in unincorporated areas be standardized. The plan recommends a change in licensing to an exclusive license format for commercial haulers. 	<ul style="list-style-type: none"> There is one transfer station in operation. Two transfer stations are proposed for the short term. Plan recommends feasibility studies for reuse of agricultural wastes & source separation, and market studies for glass and corrugated paper from wineries. 	<ul style="list-style-type: none"> One of the 5 existing sites will close in the short term. No new sites are proposed. 	<ul style="list-style-type: none"> No recommendations were made for administration. Currently, nine public agencies, eight cities, and the county are involved in solid waste management. The County Department of Public Health is the designated enforcement agency. 	<ul style="list-style-type: none"> There are 11 licensed collectors in the county; 6 serve the cities & 7 of these serve the unincorporated county. All the active disposal sites are owned and operated by the county. No refuse is exported or imported into the county. 	<ul style="list-style-type: none"> Collection services provided by the private sector will continue to be funded by user fees. Funds from the county tax rolls are used when the user fees fall short. Recommends paying for operational costs through fee charges.

Policy 3: Regional or subregional resource conservation and recovery programs should be consistent with the regional solid waste management plan, and should focus on multi-jurisdictional projects for waste reduction and recovery of materials and energy from solid waste.

Policy 4: All solid waste disposal sites must be situated, designed and operated to provide protection to the surface and ground water quality and the natural environment, as well as protection of public health and safety.

Policy 5: Where possible, methods should be incorporated into the existing permit process for solid waste management facilities that will facilitate early discussion of project-related issues.

Policy 6: Agencies existing regulations, including time limits for review and comment, should be clarified and additional ones adopted where necessary to formalize procedures used in processing of or commenting on applications.

Policy 7: Permit coordination procedures for solid waste management activities should be integrated with other coordination projects in the future, as appropriate.

Policy 8: Public education programs are essential to promote awareness of need for waste reduction.

Policy 9: Federal and State governments should adopt legislative and administrative changes that promote waste reduction.

Policy 10: Regionwide cooperation is needed to develop stable, adequate markets for secondary materials.

Policy 11: Federal and State governments should adopt legislative and administrative changes to improve competitive positions of secondary materials and products containing secondary materials.

Policy 12: All levels of governments should encourage development of source separation programs.

Summary of Actions

- Carrying out the county plans as required by SB 5 and as a major component of the regional Solid Waste Management Plan.
- Updating the county plans and the regional Solid Waste Management Plan.
- Review of proposed resource recovery projects.
- Development of additional information needed for resource recovery planning.

- Control of land disposal of wastes to protect water quality.
- Action programs to reduce waste.
- Action programs to increase separation and recycling of reusable materials.
- Federal and State legislative and administrative changes to promote waste reduction and resource recovery, and
- A coordinated permit approval system for solid waste facilities and disposal sites.

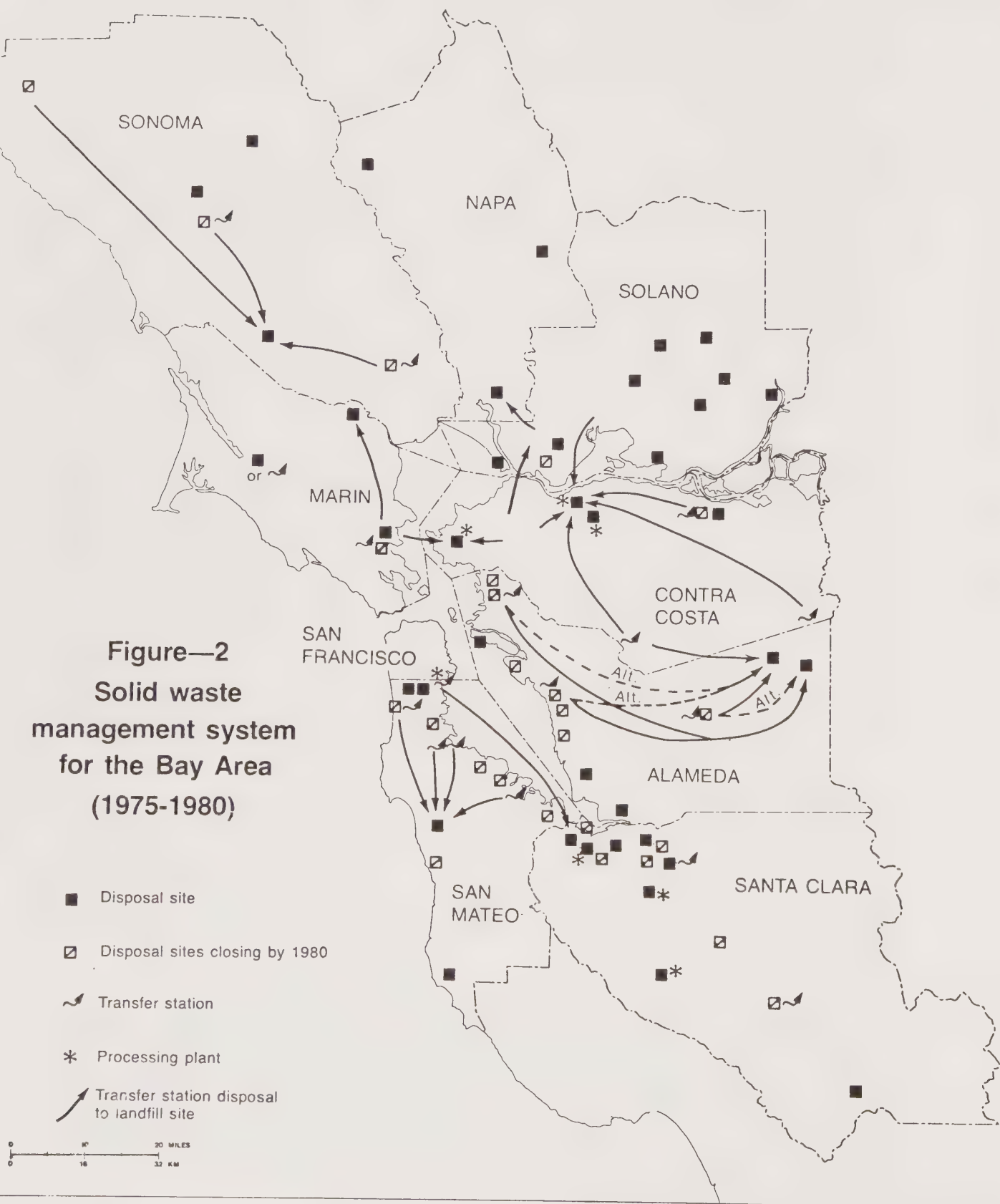
The recommendations in this plan for coordination of the permit process are a result of extensive work with local, regional, state and Federal permit-issuing agencies and representatives of the refuse removal industry. The basic elements of the recommended process are ensuring availability of information on permits, clarification of existing procedures and deadlines of the many agencies with permitting responsibilities, and early identification and discussion of permit issues. Existing agencies will continue to carry out their mandated and designated functions in relation to solid waste management. Applicants must still go through the permit processing of the individual agencies, but, it is hoped, with a fuller and earlier understanding of agencies that must be approached, requirements, project-related issues, and the length of time involved.

The first step in implementing this permit coordination process would be for the individual agencies to clarify existing requirements, including time limits, and develop new ones where necessary. ABAG would develop a packet of informational material on agencies' permit procedures, requirements, applications, and contact persons, and then would supply this to the county solid waste management agencies. Applicants for solid waste facilities will deal directly with the county departments and permit authorities as they do now, with the added advantage that they can get complete information about all of the requirements they must meet at the beginning of the process. While applicants will still have to consult with the regulatory agencies involved and participate in the necessary public hearings, the process does enable the county to convene meetings of the various agencies to smooth the process of establishing solid waste sites and facilities that are needed to implement the county plan.

Recognizing that permit coordination systems are being developed by other agencies, ABAG intends to continue sharing ideas and experiences with hopes of avoiding duplication of effort. In the future, integration of these parallel efforts may be desirable. (Further information on the permit coordination is included in Solid Waste Management Plan Technical Memoranda Nos. 4 and 8 and in the Bay Area Permit Directory For Industrial Development.)

The following is a brief description of the recommended regional solid waste management system, based on the county plans. A graphic description of the regional system through 1980 is shown in Figure 2. Current resource recovery projects are summarized in Table 1. Since State law requires that the county and regional plans be updated on a regular basis, such a graphic description illustrates the solid waste management system for the near term, and cannot anticipate changes that might be brought about by a county's revisions to its solid waste management plan, as required by law.

Figure—2
Solid waste
management system
for the Bay Area
(1975-1980)



Storage and Collection. Attempts will be made by the cities and counties to make storage and collection standards more uniform. State standards will be the minimum for any adopted county standards.

The operation of collection services will generally continue according to the existing arrangements with private franchise companies. In some cases, service areas will be more firmly established.

Transfer and Processing Facilities. Because of the location of future disposal sites, about 8 more transfer stations will be needed. Resource recovery operations will be implemented at some of the transfer stations in the short term.

Disposal Sites. By 1980, many of the existing sites will be closed. New sites will be developed but will be farther away from major urban areas.

There is considerable cross-county disposal. In 1975, about 1 million tons of municipal wastes went to landfills outside the county of origin. This trend is likely to continue in the future.

Administration and Operation. Responsibility for administration of solid waste management systems in general will still be shared by cities, counties, and special districts. In some cases, joint exercise of powers agreements have been or will be established among the involved public agencies to guide the implementation of the county solid waste management plans. In other cases, a county department will be designated to administer the county plan and monitor the county franchises; a county solid waste management committee, including all cities and special districts, may be formed to provide guidance for policy making, public information, reviewing and updating the county plan, and setting standards.

An enforcement agency(s) as required by State law has been or will be designated in each county. It must be an agency other than the agency or county department that implements the county plan. The County Health Department is designated in most cases.

Financing. Capital expenditures for county plan implementation in general include improvements of existing disposal sites, development of future sites, and construction of transfer and processing facilities.

Most of the expenditures will occur in the private sector and will be financed through bank loans and leases and repaid through user fees and other charges.

Public financing of some of the large-scale processing facilities is also possible, especially when Federal and State financial assistance is involved.

HAZARDOUS WASTE MANAGEMENT

This part of the plan includes recommendations for the improvement of the existing hazardous waste management system. It does not include recommendations for developing a new comprehensive system for the region

because of data limitations. Planning for hazardous waste management, including resource recovery and determination of the need for additional landfill capacity, requires accurate data about the quantities and types of wastes being generated. Currently, accurate information is only available for the amounts of wastes being delivered to hazardous waste disposal sites (Class 1 sites), while many wastes are being disposed of on-site. In the Bay Area, only Alameda County--with a grant and technical assistance from the State Department of Health--has conducted an industry-by-industry survey to determine quantities of wastes being produced, reused and disposed of on-site.

Policy 13. Adequate planning for hazardous waste management requires accurate data.

Policy 14. Waste reduction, source separation, and recovery of hazardous industrial wastes should be promoted in the interest of limiting land disposal.

Policy 15. Regulations should ensure safe and proper handling of hazardous wastes.

Policy 16. Future Class I disposal sites and facilities should be located so that they do not have adverse effects on human health and safety, air and water quality, wildlife, critical environmental resources and urbanized areas.

Summary of actions

- Surveys of hazardous industrial wastes and hospital wastes to be conducted on a county-by-county basis.
- Need for additional hazardous waste disposal site capacity to be determined by the counties.
- Reduction, source separation and resource recovery of hazardous wastes to be encouraged, and research and development programs to be undertaken.
- Requirements for existing hazardous waste handling practices to be enforced.
- Hazardous waste disposal site criteria to be established and potential site areas reserved upon determination of regional need for additional disposal capacity.

WASTEWATER SOLIDS MANAGEMENT

This part of the plan is based on the Wastewater Solids Management Plan being developed in the regional Wastewater Solids Study. This study is being conducted by East Bay Municipal Utility District as the lead agency for a group of wastewater dischargers which includes:

- City and County of San Francisco
- Cities of San Jose/Santa Clara
- Central Contra Costa Sanitary District
- Other dischargers represented by the Subregional Agency Advisory Committee.

Recommended alternatives to be included in the regional Wastewater Solids Management Plan are presented in Table 6.

The results to date indicate that there are basically four viable alternatives from which to choose. Two are beneficial use projects--commercial agricultural use and composting/marketing--and two are disposal alternatives--landfill or land disposal and combustion. The combustion alternative includes co-combustion of sewage sludge with municipal solid wastes.

The plan will include regional goals for wastewater solids management and the best apparent alternatives for the four major agencies. Recommendations will also be included for combinations of subregional and local treatment agencies sludge management programs where appropriate.

Facilities plans will be developed for the four major agencies by the Wastewater Solids Study after the development of the regional wastewater solids plan in December, 1977.

Policy 17. A regional plan for long-term wastewater solids management should be prepared and updated.

Policy 18. Facilities for wastewater solids management should be constructed in conformance with the regional wastewater solids plan and the Environmental Management Plan (208 plan).

Summary of actions

- Facilities for wastewater solids management would be constructed in accordance with the approved regional plan.
- Proposed facilities plans for wastewater solids management would be reviewed through the A-95 process, and only those proposed facilities that are consistent with the regional solid waste management plan and the 20 year project list for the Environmental Management Plan would be approved.
- The regional Wastewater Solids Management Plan would be updated as part of the regional solid waste management planning effort.

Table 6

WASTEWATER SOLIDS MANAGEMENT
ALTERNATIVES FOR DETAILED EVALUATION

Agency	Sludge End Product Disposal	Use	Sludge Process Alternatives	End Product Transport	Disposal/Use Site Location
EBMUD (Organic Sludge)	Landfill* Land Disposal Combustion - Landfill Ash	Agricultural Use Compost/Market	Digestion* Centrifuge Dewater* Compost Combustion	Truck* Barge	Alameda County Contra Costa County Solano County Treatment Plant Site
San Jose - Santa Clara (Organic Sludge)	Landfill Land Disposal Combustion - Landfill Ash	Agricultural Use Compost/Market	Digestion* Centrifuge Dewater Vacuum Dewater Pressure Dewater Drying Beds Compost Combustion Lagoon Storage*	Truck* Barge	Santa Clara County San Benito County Treatment Plant Site*
San Francisco (Organic Sludge)	Landfill* Land Disposal Combustion - Landfill Ash	Agricultural Use Compost/Market	Digestion* Centrifuge Dewater Vacuum Dewater Pressure Dewater Compost Combustion	Truck* Barge	San Mateo County Contra Costa County Solano County Santa Clara County
CCCSD (Lime Sludge)	Landfill* Land Disposal Combustion - Landfill Ash	Agricultural Use Industrial Use	Centrifuge Dewater* Pressure Dewater Combustion*	Truck* Barge	Contra Costa County Alameda County
Combinations of Major and Subregional Agencies	Land Disposal Combustion - Landfill Ash	Agricultural Use Compost/Market	Chemical Stabiliza- tion Digestion* Centrifuge Dewater Vacuum Dewater Pressure Dewater Drying Beds* Compost Combustion*	Truck* Barge Rail Pipe	Identified Urban and Rural Sites

*Existing Practice

AIR QUALITY MANAGEMENT

PLAN RECOMMENDATIONS

The draft air quality maintenance plan is comprehensive, recommending a broad range of control programs for photochemical oxidants. It includes more controls on stationary sources of air pollutants and on motor vehicles. It also includes proposals for changes in the region's transportation systems and for management of development to achieve compact growth.

The recommended application of improved technological controls to stationary sources and motor vehicles would produce the most substantial improvements in air quality. The transportation and development measures would act together to reduce automobile traffic, a major source of air pollutant emissions. The stationary and mobile source controls, together with transportation and development measures and new and indirect source review programs, would ensure eventual attainment and long-term maintenance of the Federal oxidant standard.

In addition to other requirements, an acceptable air quality plan must demonstrate numerically that the oxidant standard would be achieved and maintained. The Environmental Management Task Force directed the staff to prepare such a plan, and to present options to measures in that plan. Approximately 100 measures were analyzed for their effectiveness in reducing emissions. The recommended plan is described in this section. Options for measures in the plan are described in Section 5. At the end of this section, a procedure is described for modifying the plan.

The recommended plan is diverse and flexible. The diversity is an advantage because it reduces the reliance on a single type of control. The plan is flexible because the new and indirect source review programs can be applied with varying degrees of stringency as appropriate to meet the standard. Flexibility is desirable to accommodate uncertainty. In Section 4, uncertainties relating to forecasting and the analytical tools used for the preparation of the air quality plan are discussed. There are also uncertainties in estimating the effectiveness and costs of control programs that have not yet been implemented, and for which only limited information and experience are available.

The development and transportation actions would be implemented by local governments and would demonstrate good faith efforts to meet and attain the oxidant standard as expeditiously as practicable. It is quite clear that the partnership of Federal-State-regional-local efforts called for by this plan to improve air quality would demonstrate reasonable progress toward attainment and could qualify the region for a five-year extension in meeting the Federal standard.

RECOMMENDATIONS

Figure 28 highlights in graphic form the schedule for implementation of each of the plan recommendations. Most of the recommendations could be adopted by appropriate agencies within two years of plan approval. However, full implementation would realistically require several years beyond the adoption phase, particularly for the most significant programs such as the use of best available control technology (BACT). It is therefore unlikely that the oxidant standard can be met in the Bay Area by 1982. The ultimate 1987 target year for attainment set by the 1977 Clean Air Act Amendments can be met through implementation of this plan.

The following narrative provides background information for the recommended actions.

I. General Policy: Minimize Hydrocarbon Emissions from Stationary Sources

The actions necessary to implement this policy must focus on both existing and future sources of hydrocarbon emissions in the Bay Area. Heavy reliance is placed on requiring the use of advanced emission control technology for existing sources. New sources of emissions will face stringent review requirements before being allowed to locate in the region.

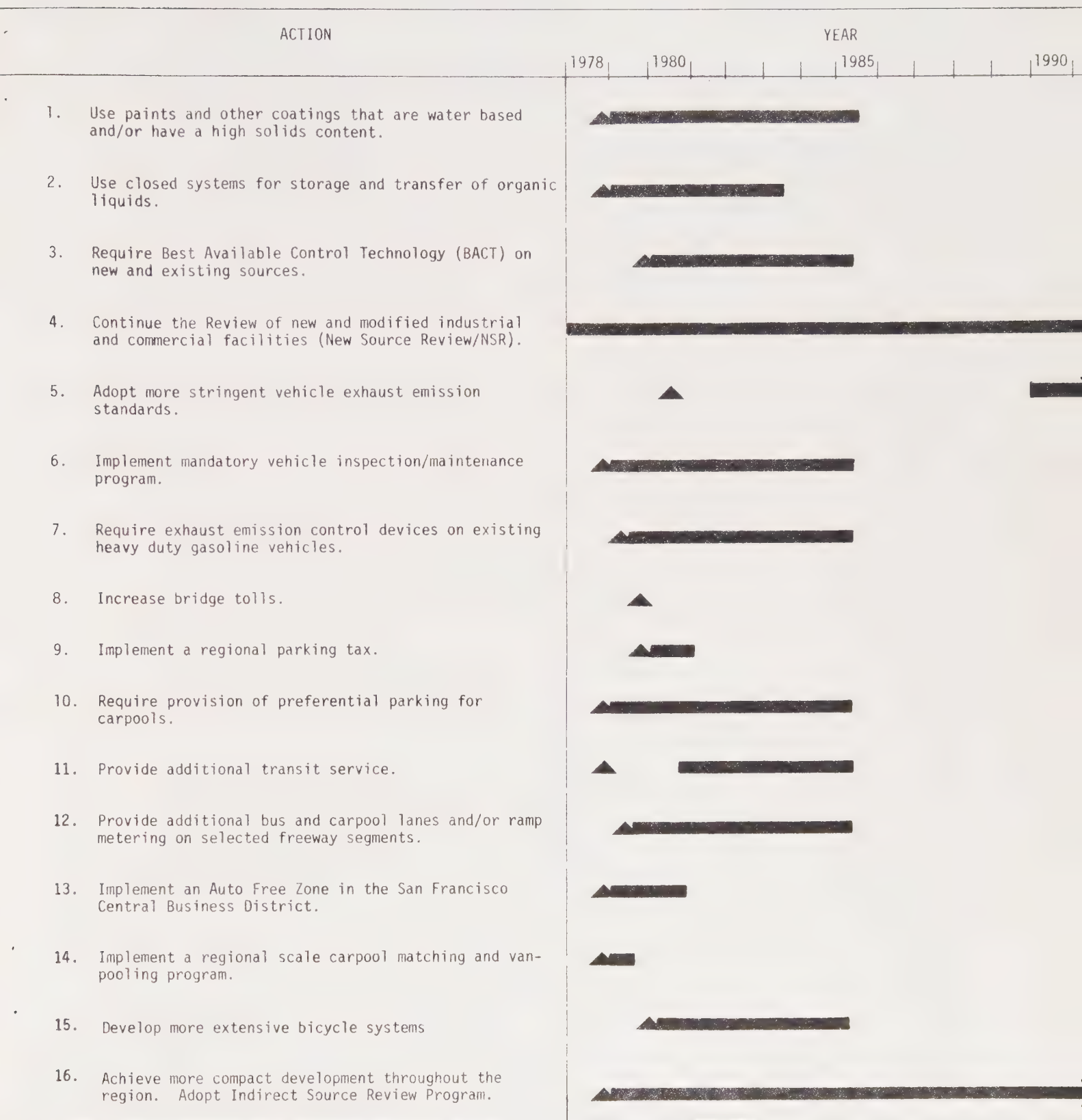
Action 1: Use paints and other coatings that are water based and/or have a high solids content.


Surface coating operations, e.g., architectural and industrial painting, constitute a major source of hydrocarbon emissions to the atmosphere. Without further controls, coating operations projected to 1985 would emit 140 of a total of 570 tons per day of hydrocarbons from stationary sources. Hydrocarbons result from evaporation of the solvents and thinners in paints and coatings used to provide a variety of properties such as consistency, settling rate, drying time and flow over the surface. Architectural coatings are defined as those used on structures, interior and exterior, such as buildings, fences, bridges, etc. Industrial coatings are those applied in production of auto bodies, cans, fabrics, toys, etc.


Two types of control measures have been in effect for several years. The first limits the use of highly photochemically reactive organic chemicals in solvents, substituting less reactive chemicals. These reformulated solvents are less reactive than formerly, but are still photochemically reactive. The second, used in industrial coating operations where the solvent emissions can be contained and channeled, incinerates the emissions - analogous to afterburners on automobiles - or adsorbs emissions on activated charcoal for subsequent recovery.

The proposed measure is aimed at reducing the amount of organic solvent evaporation from surface coating operations by reducing the content of organic solvent in the coating as applied - perhaps more properly, by reducing the

FIGURE 28. SCHEDULE FOR IMPLEMENTATION OF THE AIR QUALITY MAINTENANCE PLAN



 adopt program/regulation

 implementation

amount of organic solvent used per area of surface coated. This may be done by substituting water as the solvent (water based coatings) or by increasing the proportion of solids to solvent (high solids coatings).

Action 2: Use closed systems for storage and transfer of organic liquids.

The petroleum refining and marketing industry, plus other industries storing organic solvents, emits a substantial quantity of hydrocarbons from storage tanks, approximately 88 tons per day as projected to 1985. Storage tanks without controls emit vapors as "breathing losses." Each time a tank is filled with liquid the vapors inside the tank are forced out. Breathing losses have been controlled for many years by use of the floating roof, a tank roof that literally floats upon the surfaces of the liquid, moves up and down with that surface, and eliminates the space in which vapors could accumulate. BAAPCD regulations require such floating roofs.

The floating roof is a very effective device, attaining over 90% control, but still permits source evaporation around the edges. The large number of tanks involved and the large volume of petroleum handled result in the tonnage of emissions noted previously.

In addition to requiring floating roofs on large storage tanks, vapor units are presently required in gasoline transfer operations between tank and delivery trucks, between delivery trucks and service station tanks, and in auto filling.

To insure the maximum degree of control, approaching 100% on individual installations, this measure would require actually closed systems, without, for instance, gaps as at the edges of the floating roof. This would require a vapor recovery unit to condense and return the vapors to liquid form, or connection to a fuel system where the vapors would be burned as fuel. For maximum control, stand-by duplicate recovery units would be required.

This recommendation was proposed to attain maximum control. The CARB has proposed a measure requiring alteration of the floating roof by installing an additional (secondary) seal and tightening the limitations on primary seal gap size. This measure would provide a somewhat lesser increment of additional control, but probably at a much lower cost.

The California Air Resources Board proposal 1) requires secondary seals on existing floating roof tanks 2) sets the maximum allowable emissions from fixed roof tanks 3) requires vapor recovery systems to be 90% efficient up to March 1980 and 95% efficient thereafter 4) requires that vapor recovery systems on storage tanks constructed after November 1, 1977 be 95% efficient. The CARB has imposed this regulation on the South Coast Air Quality Management District.

Action 3: Require best available control technology (BACT) on new and existing sources.

The legislation establishing the BAAPCD did not permit the BAAPCD to specify control equipment to be used in meeting control regulations and emission limitations. Therefore, until recently, all BAAPCD regulations were performance regulations. The regulation specified limits on the amount, concentration, or visible appearance of the emission; the means of complying with the regulation was the prerogative of the operator of the source.

More recently, State laws have been altered to remove the prohibition against specification of equipment thus allowing the BAAPCD to require the use of the most effective technology actually available and proven in use, not necessarily in the Bay Area. It does not include unproven theoretical devices.

Examples of specific industrial and commercial process affected and the types of technologies which could be required are listed below:

<u>Process</u>	<u>Technology</u>
Organic Storage	Dual and paralld vapor recovery
Tar Pots	Loading door assembly
Paint Spray Booth	Incinerator or low/no solvent coatings
Architectural Coating	Low solvent coatings
Dry Cleaning	Closed system with solvent recovery
Chemical Milling	Fume incinerators
Cable Tar Coating	Incineration
Gasoline Bulk Storage	Floating roof or fixed roof plus vapor recovery
Auto Service Station Storage Tanks	Closed balanced system with secondary system
Auto Fill Operations	Secondary vacuum assist system

A BACT rule would require that both existing and future operations use specified air pollution control techniques, such techniques being specified by the BAAPCD. The rule could be adopted by the end of 1979, but five years should be allowed for full implementation.

Action 4: Continue the review of new and modified industrial and commerical facilities (New Source Review/NSR).

Since July of 1972 the BAAPCD has had in effect a permit rule (Division 13, Regulation 2) specifying the authority to deny a permit to construct (Section 1309) or to operate (Section 1310) if the new source will "interfere with the attainment or maintenance of any air quality standard adopted by the California Air Resources Board or the Environmental Protection Agency...."

Section 1311.2 of that same regulation specifies that a permit will not be denied if the emissions of each contaminant from a facility are significantly less than from the original facility. Thus a degree of off-set is acknowledged, i.e., if emissions from existing operations are reduced by more than the emissions from a new operation, the new operation will be allowed. It is important to understand that Section 1311.2 is interpreted to mean that the reduction of existing emissions must be accomplished from facilities operated by the same owner, i.e. the owner of the proposed facility, and at the same location. Additionally, Section 1311.2 requires off-set to be for the same pollutant type, e.g., SO₂ for SO₂, not carbon monoxide for hydrocarbons.

This action would retain the present BAAPCD permit rule with or without expansion of or modifications to the off-set provisions. Depending on the success of all other air pollution controls recommended in this plan, the New Source Review rule would require:

- o The prohibition of some new industries with significant emissions (for example, an industry that cannot meet the New Source Review criteria or could not obtain the designated emission off-set).

- o Increased cleanup from existing sources through off-sets/negotiation, or in some cases prohibition of modifications proposed by existing sources

II. General Policy: Minimize Hydrocarbon Emissions from Motor Vehicles

The actions necessary to implement this policy change with time. Initially, effort would be focused on implementing exhaust controls on gasoline powered trucks and a program of mandatory vehicle inspection and maintenance for both autos and trucks. These programs will act to minimize emissions from existing vehicles. On a longer term basis, more stringent vehicle emission standards are recommended as new engine technologies become available for mass production. The mandatory inspection and maintenance program would still be necessary on a long term basis to ensure that the newer, cleaner vehicles being produced continue to perform at their design levels after they have been operated for some time.

Action 5: Adopt and implement more stringent vehicle (light duty and heavy duty) hydrocarbon exhaust emission standards--approximately 50% below the ultimate level currently prescribed by State and Federal regulations.

Currently promulgated emissions standards for motor vehicles will achieve substantial emissions reductions from light and heavy duty vehicles in the period 1980-1985. These reductions, however, will eventually be offset by growth in vehicle population and vehicle miles travelled that is anticipated between 1985 and 2000. For example, in 1985, baseline motor vehicle hydrocarbon emissions are projected to be 213 tons per day. In 2000, the emissions increased to 267 tons per day.

The recommendation requires that the exhaust emission characteristics of vehicles manufactured after 1990 be reduced by:

- o 50% from the ultimate levels promulgated under the 1970 Clean Air Act Amendments for light duty vehicles. The requirements (i.e. grams per mile standards) in the 1977 Amendments are approximately the same as the 1970 Clean Air Act.
- o 50% from the ultimate 1983 Air Resources Board standards for medium and heavy duty vehicles.

The resultant emission standards would be:

	grams/mile		
	HC	CO	NOx
light duty	.20	1.70	.40
medium duty	.25	4.50	.15
heavy duty*	.25	12.50	4.5

*grams brake horse power

Action 6: Implement a mandatory annual inspection and maintenance program for light and heavy duty vehicles.

While automobile emissions can be controlled by a variety of basic engine modifications and exhaust treatment devices, the state of tune of the vehicle also affects emissions significantly, regardless of what emission standards the vehicle was originally designed to meet. For example, misfiring spark plugs can increase unburned hydrocarbon emissions tenfold. An incorrectly adjusted idle air/fuel ratio can double carbon monoxide emissions. Defective emission control components can cause the emissions of late model cars to equal those of uncontrolled vehicles. A program for identification and repair of vehicles with excessive emissions caused by maladjusted or defective components has the potential to significantly reduce automotive emissions.

The recommendation requires inspection of all light duty automobiles starting in 1982 and the inspection of medium duty vehicles beginning in 1985. The inspections (which would take about five minutes) consists of: visual safety inspections, visual inspection of the emission control systems and exhaust smoke; automatic computer analysis of carbon monoxide and hydrocarbon exhaust gas emissions (could also include oxides of nitrogen, if loaded tests were performed), and an automatic printout of the inspection report comparing the emissions measured to acceptable limits for that particular model. If the vehicle fails the inspection it is required to be repaired by a certified mechanic and then be reinspected. If the vehicle cannot be repaired in order to meet the standard of performance for under a pre-established amount (e.g. \$75) then the vehicle owner may be given a waiver for that year. This would not relieve the vehicle owner from future year inspections.

Action 7: Require exhaust emission control devices on existing heavy duty gasoline vehicles.

The regulation of emission levels from heavy duty vehicles (over 6,000 pounds gross vehicle weight) has lagged behind efforts to control light duty vehicle emissions. The slower turnover rate for heavy duty vehicles means they remain in use for a longer time than light duty vehicles. Thus, even with emissions standards for heavy duty vehicles, some control program is needed to minimize emissions from in-use vehicles before they are replaced by newer and cleaner vehicles.

The recommendation requires that all heavy duty gasoline (HDG) vehicles manufactured in 1971-1982 be retrofitted with a catalytic converter by 1985. Diesel vehicles are exempted because they emit relatively small amounts of hydrocarbons and because it is impractical to install a converter. Pre-1971 models are exempt because they require leaded gasoline (leaded gasoline contaminates the catalyst). Post-1982 vehicles are assumed to be equipped with catalysts in order to meet the 1982 emissions standards already adopted by the California Air Resources Board.

III. General Policy: Reduce Motor Vehicle Emissions Through Transportation Actions to Reduce Vehicle Use

The objectives of the transportation actions recommended are to discourage use of the "drive alone automobile" and to encourage use of public transit

and other high occupancy vehicle travel modes. The actions include both economic and physical incentives and disincentives to accomplish the objectives. In addition, the revenues generated through application of economic disincentives is used primarily to fund transit service improvements.

Action 8: Increase tolls to \$1.25 during peak traffic periods and \$1.00 during off-peak periods for all trans-bay bridges.

This measure should discourage driving alone and encourage transit use and carpooling. The net effect should be a reduction in vehicular travel. A toll increase could provide an attractive secondary benefit. A significant increase in revenue which could be made available for future transit service extensions. After extensive public review and environmental documentation, the Bay Bridge, San Mateo Bridge and Dumbarton Bridge tolls were raised to 75¢ in July 1977, raising an estimated \$8 million which is available for transit.

The toll increase would be implemented on each bridge when adequate alternative transit service becomes available on that facility. In addition, the existing preferential treatment given to buses and carpools on the Bay Bridge and the Golden Gate Bridge would be continued.

Action 9: Implement a regional parking tax. A 35% parking tax would be applied to all vehicles entering paid parking facilities between 6 and 10 a.m.

This measure would increase the cost of driving for commuters, but would not unduly restrict shoppers or other short-term visitors. The commuter has more transit alternatives and, because of the repetitive nature of his trip, is more susceptible to transit and carpool incentives. This measure would also help to reduce peak period congestion and conserve energy.

San Francisco levied a 25% tax on parking receipts in 1970. Some operators responded by absorbing the tax, thereby reducing their profits. The tax was reduced to 10% in 1972, but was recently raised to 15%.

The parking tax would have to be implemented regionwide to insure equity among the major cities. To accomplish this, legislation would be required giving regional authority to set the level of parking tax. Since most cities already have agencies that monitor parking operations, they would be the likely candidates to collect and monitor the tax. The tax would be a business license tax based on revenue purposes. The revenues could then be used to augment the city's general fund and to provide additional regional transit service.

Action 10: Require provision of preferential parking for carpools.

Preferential parking would be provided to carpools by giving them a) reduced parking charges in areas with paid parking, such as central business districts, or b) a time savings in areas of free parking, such as large suburban employers.

Carpooling can be one of the more effective ways of improving the efficiency of the transportation systems, both from an air quality and operations viewpoint. However, people are frequently reluctant to carpool because of the time lost in picking up members.

The carpool parking incentives are modelled after a program that Caltrans is currently testing. State lots are leased to operators at a reduced rate on condition that 1) they only allow carpools to park, and 2) charge no more than \$10/month. Carpools sign up for a space and there is currently a waiting list.

The time incentive would work by having large employers set aside close-in parking for carpools. This would compensate for the time lost in the pick-up phases.

Action 11: Provide additional transit service throughout the region, with an interim goal of a 20% increase in transit capacity by 1985.

The additional service would help make transit more competitive with respect to the auto by providing more coverage or better frequency. Existing funding services could not support this new burden. Additional revenues, such as the parking taxes or toll increases would be required.

The expansion program would be phased over 5 years, and would begin in 1980.

Action 12: Provide additional bus and carpool lanes and/or ramp metering on selected freeway segments.

Some form of preferential treatment (special lanes on the freeways and/or ramp metering with special lanes on ramps) would be given to buses and carpools on the following freeway segments:

- o Route 580 from Route 24 to the Bay Bridge
- o Route 80 from San Pablo Dam Road to the Bay Bridge
- o Route 101 from the San Francisco Airport to the Route 280 Diamond Lane.

Since these would require detailed planning, funding approval and construction, they would not be operational until 1985.

This measure is another incentive to induce commuters to take transit or to form carpools by saving them time. These particular segments of freeway are frequently congested during peak hours and preferential treatment could result in significant time savings.

Action 13: Implement an Auto Control Zone in the San Francisco central business district to be serviced directly by public transit.

European experiments with Auto Control Zones have shown an ability to reduce markedly noise and air pollution within congested urban centers. By creating an Auto Control Zone within a small sector of the San Francisco central business district, the automobile commuter bound for this area would have to walk further. As the zone would be serviced directly by transit, the transit rider would experience no increase in walking time and an increase in ridership can be expected. An improvement in regional air quality would result from reducing the amount of traffic bound for the central business district. Local carbon monoxide "hot spots" would be eliminated because of reduced vehicular congestion.

The transportation Element of San Francisco's Master Plan calls for an auto control zone in the central business district. It is possible that this measure could be fully implemented by 1981.

Action 14: Expand a regional scale carpool matching and vanpooling program.

Currently, a carpool matching program, RIDES, is being administered by Caltrans. It is aimed at major employment centers, with participants solicited primarily by general advertising campaigns. This has been a successful program to date, but the AQMP proposal would intensify the effort. Increased employer participation would be sought for direct employee contact or adjustment to flexible working hours. Also, secondary employment centers could be served by tailoring campaigns to specific areas.

With respect to vanpools, the Golden Gate district is starting a demonstration program to initiate vanpools from Marin County. A program such as this could be expanded to the regional level. One proposal is for a non-stock, non-profit corporation to provide standardized minimum risk leases of vans to employers and employee groups meeting the criteria for such a program. Lease terms and specifications could be prearranged through a competitive bidding procedure.

Action 15: Implement a comprehensive system of bicycle paths and storage facilities.

The system would be directed toward major employment centers, commercial centers, and transit terminals throughout the region. The paths would be painted on existing streets with approximately one-half mile intervals between parallel paths. Storage would comprise lockers, racks, and whatever special storage areas may be provided by the private sector. Initial planning for the measure would commence in 1978. The physical construction of the system would begin in 1980 and continue through 1985.

This measure has the potential to improve regionwide air quality by diverting both work and non-work trips of less than 2.5 miles to bicycles. Sunny and warm days, when the photochemical problem is most serious, are also the most conducive to bicycle riding. Emissions from cold starts and hot soaks, will produce the majority of mobile emissions by 1985. Thus, even though bikes would not reduce vehicle miles travelled significantly, they will have a significant impact on emissions by reducing the number of trips.

IV. General Policy: Alter regionwide development patterns to reduce automobile travel by means of local and regional policies on land use and urban services.

Analysis of development trends in the Bay Area shows that distances between home, work, shopping, school and recreation are increasing in ways that will cause more serious air pollution. This is because development is becoming ever more scattered, at lower density, with more separation between where people live and where they go. In many fringe areas, development occurs without sewer, water or transit service. Older city areas are bypassed, with little rebuilding or use of vacant land where urban services already exist or are committed. Densities get even lower because the preponderance of residential construction is for single-family homes or large suburban lots. Densities are also getting lower because of the need for large lots

in locations where health and safety dictate it to accommodate use of septic tanks and wells, as well as to enable building on steeper slopes. The pattern of urban sprawl results in increasing dependence on the automobile. More people must use the auto for more purposes at ever greater distances. The policy suggested is to reduce auto dependency and thereby improve air quality.

The general policy stated above has 16 more specific policies and 49 actions indicating what government agencies would need to do to alter development patterns to bring about more compact development. The policies and actions include adopting urban services areas, extending development consistent with those areas, building on bypassed land within existing areas. They also involve encouraging densities consistent with earlier local practice (e.g. the 1900s and 1930s), and would allow in certain instances mixed residential, commercial and industrial areas. They also would mean adopting programs to reduce the imbalance between jobs and housing throughout the region, so that distances between jobs and homes can be shortened. The compact growth policies and actions described in this chapter would reduce automobile emissions and improve air quality. They are a more precise statement of the city-centered policy adopted by the ABAG General Assembly in the Regional Plan of 1970 and the General Assembly's growth policy actions of 1973 and 1974. Some of the policies and actions are already being carried out by some local jurisdictions in the Bay Area. Not all actions would be required of every city and county--or every public agency involved. Specific actions would be determined in cooperation with the jurisdictions involved in the first and subsequent years of the continuing planning process.

The policies and actions are as follows:

Policy A: Extend new development only to those locations with existing sewer and water service or sewer and water service committed in capital improvement programs.

Action 1: Local Agency Formation Commissions (LAFCOs) adopt city and special district spheres of influence throughout the region as soon as possible.

Action 2: LAFCOs adopt the "urban service area" concept for defining urban service commitments and projecting urban land needs for 5, 10 and 20 year periods.

Action 3: LAFCOs approve annexations and formation of cities and special districts consistent with Action 2 findings on urban service commitments and urban land needs.

Action 4: Counties and cities enact non-urban zoning outside urban service areas.

Action 5: Counties and cities enact temporary moratoria on urban zoning and subdivisions outside urban service areas pending the enforcement of non-urban zoning in such areas.

Policy B: Restrict development outside urban service areas in areas of critical environmental concern (environmental resources, hazards, or amenities).

Action 6: Counties and cities enact agricultural zoning or large-lot rural residential zoning (generally one dwelling unit per 40 acre minimum lot size).

Action 7: Counties and cities initiate, continue or expand programs under the California Land Conservation Act (Williamson Act), the Open Space Easement Act of 1974 and the Z'berg-Warren-Keene-Collier Forest Taxation Reform Act of 1976 outside urban service areas.

Action 8: Counties and cities establish programs of public land management (including acquisition, purchase/leaseback, purchase/transfer of development rights, etc.) for locations outside urban service areas.

Policy C: Develop unimproved land within urban service areas where urban services exist or are committed in capital improvement programs.

Action 9: ABAG, counties, cities and LAFCOs establish "early warning" inter-agency information exchange programs concerning urban service facility plans at the earliest stages of project planning.

Action 10: Expedite city, county, LAFCO or ABAG project reviews where needed information on service capacities has been provided under Action 9 above.

Action 11: Counties and cities initiate rezoning and permit preference procedures in locations with existing but unused service capacities (with emphasis on water, sewer, transportation and school services).

Policy D: Complete, as soon as possible, all needed sewer, water or transportation service improvements within adopted urban service areas.

Action 12: LAFCOs review all city, county, or special district sewer, water, or transportation service capital improvement programs and report on priority needs within each urban service area.

Action 13: ABAG review sewer, water and transportation needs within all urban service areas to determine regionwide priorities among such service needs.

Action 14: ABAG favorably review applications for State/Federal financial assistance from agencies lacking service capacity within urban service areas, where other existing or committed services have been found by the LAFCO to be capable of accommodating additional development.

Policy E: Improve highway, street, road and transit systems consistent with local actions to stage land development.

Action 15: Counties and cities enact planning and zoning regulations to stage land development consistent with the scheduling of urban services (including but not limited to "development sequence zoning", "tiered zoning districts", development timing permits etc.).

Action 16: Caltrans, MTC, counties, cities, and special districts plan, program, fund and construct highway, street, road and transit improvements consistent with local action to stage land development.

Policy F: Increase housing and job opportunities in existing urbanized areas by encouraging public and private rebuilding into compatibly mixed commercial, industrial and residential land uses.

Action 17: Counties and cities initiate and/or expand housing conservation programs in existing urbanized areas.

Action 18: Counties and cities initiate and/or expand commercial and industrial development and redevelopment in existing urbanized areas.

Action 19: Counties, cities and special districts initiate and/or expand incentives to public and private redevelopment in urbanized areas. Emphasis would be on sewer and water facilities, and extensive transit service improvements, but should also include educational and cultural facilities and public safety service improvements where appropriate.

Action 20: ABAG, counties and cities analyze possible local revenue reforms to provide adequate financial resources to carry out Action 19.

Action 21: ABAG support State legislation to provide local governments with adequate fiscal resources to carry out Action 19.

Action 22: ABAG oppose Federal and State legislation that would hamper the ability of local governments to carry out rebuilding programs to increase job and housing opportunities in existing urbanized areas.

Policy G: Encourage "infill" development of bypassed vacant land within urban service areas.

Action 23: Counties and cities undertake planning studies to inventory bypassed land, identify development problems, and resolve questions of best potential use.

Action 24: Counties and cities adopt necessary changes in zoning and permit procedures to facilitate development of bypassed parcels affected by special conditions.

Action 25: Service agencies design sewer, water and transportation systems to improve accessibility and service ability of bypassed vacant land in existing urban communities.

Policy H: Develop at higher densities within service areas where existing or committed urban service capacities, including transit, can support the higher densities.

Action 26: In urban service areas with adequate sewer, water and transit capacities, counties and cities rezone appropriate locations to permit higher densities.

Action 27: Counties and cities enact ordinances (such as those for planned unit development or cluster zoning) to foster higher densities on appropriate sites.

Policy I: Limit development of land within urban service areas where soil, slope, or other conditions can support only low-density development.

Action 28: Counties, cities and special districts deny primary urban services to these locations by excluding them from capital improvement programs and design of service systems, and by enactment of hookup moratoria, etc.

Action 29: Counties, cities, and special districts establish programs of public land management (including but not limited to public land acquisition, purchase/transfer of development rights, purchase/leaseback, etc.) to maintain appropriate sites in open uses.

Policy J: Improve the balance of jobs and housing in jurisdictions throughout the region to reduce the necessity for long distance home-to-job travel.

Action 30: Cities and counties adopt programs to increase local employment opportunities if a substantial proportion of their residents work elsewhere.

Action 31: Cities and counties adopt programs to increase local housing opportunities in a price range suitable for their work forces if a substantial proportion of their work forces live elsewhere.

Action 32: ABAG conduct A-95 and EIR reviews to support local government efforts to improve the balance of jobs and housing in communities throughout the region.

Action 33: ABAG support State and Federal funding allocations for facilities and programs offering incentives to economic development or housing development in appropriate jurisdictions.

Policy K: Mix residential/commercial and industrial development in communities throughout the Bay Region.

Action 34: Counties and cities revise zoning ordinances to allow compatible mixtures of land uses with adequate design or performance standards (including planned unit developments, performance standard zoning, etc.).

Action 35: Counties and cities expand application of conditional use permits where appropriate.

Policy L: Discourage new large-scale land development projects that are exclusively commercial, industrial or residential, unless such projects clearly demonstrate that they improve the overall balance of jobs and housing in that city, county, or subregion.

Action 36: Counties, cities and LAFCOs deny incorporation or annexation of large-scale development proposals that are exclusively commercial, industrial or residential, unless such incorporation or annexation can be shown to improve the overall balance of jobs and housing in the city, county, or subregion.

Action 37: MTC, the California Department of Transportation and transportation districts deny regional transportation system access or extension to proposed large-scale land development projects that are exclusively commercial, industrial or residential unless such transportation actions can be shown to improve the overall balance of jobs and housing in the city, county or subregion.

Policy M: Fund new wastewater and transportation facilities only after areas serviced have taken actions recommended in the plan.

Action 38: The State Water Resources Control Board and the Environmental Protection Agency require applicants for wastewater facilities under Section 201 of the Federal Water Pollution Control Act to demonstrate, prior to construction funding, that specific actions (including but not limited to land development regulations, urban service commitments, etc.) have been taken by affected jurisdictions to carry out actions of this plan.

Action 39: The U.S. Department of Transportation, the California Transportation Commission, the California Department of Transportation and the Metropolitan Transportation Commission require applicants for transportation improvement grants to demonstrate, prior to funding for acquisition and construction that specific actions (including but not limited to land development regulations, urban service commitments, etc.) have been taken by affected jurisdictions to carry out actions of this plan.

Policy N: Review development proposals for air quality effects and consistency with compact development (indirect source review).

Indirect sources of air pollution are sources that do not directly emit pollutants, but which include emissions from other sources (primarily motor vehicles). An Indirect Source Review program would be used for two purposes: First, to ensure consistent application of the compact development policies; and second to prevent localized carbon monoxide problems in the vicinity of the indirect source.

The types of new or modified sources to be reviewed for approval under this measure would include, but would not be limited to, the following:

- o Highways and roads;
- o Parking facilities;

- o Retail, commercial, and industrial facilities;
- o Recreation, amusement, sports, and entertainment facilities;
- o Airports;
- o Office and government buildings;
- o Apartment and condominium buildings;
- o Education facilities.

The above sources would include most large projects.

The review procedure would be limited, however, to developments above certain size thresholds, specified in terms of daily traffic volumes for highways, annual aircraft operations for airports, and number of parking spaces for most other facilities. Indirect sources smaller than the threshold sizes are assumed to be evaluated and controlled as part of the overall compact development strategy.

Action 40: ABAG, BAAPCD and MTC adopt memoranda of understanding and procedures for prompt and thorough joint review of significant development proposals. Review would be conducted for proposals (such as shopping centers, industrial parks, office complexes, etc.) where significant air pollution could result from the project's generation of auto traffic.

Action 41: BAAPCD adopt permit procedures for application to indirect sources.

Action 42: ABAG encourage and support local government efforts to determine direct and indirect effects on air quality in making local land use decisions. Such support shall include technical assistance and analysis.

Action 43: ABAG and MTC encourage and support local government efforts to reduce adverse effects of development proposals on air quality, including but not limited to assistance in identifying and implementing mitigation measures for adverse impacts of municipal wastewater facilities and transportation improvement programs.

Policy 0: Adopt financial programs to support local and regional agency actions and private sector development actions consistent with policies in this chapter to reduce home-to-work distance and auto dependency.

Action 44: ABAG, counties and cities support State and Federal legislation to provide subventions and other fiscal assistance to cities and counties carrying out development policies to achieve air quality standards.

Action 45: ABAG, counties and cities support State and Federal legislation providing tax incentives to the private sector for rebuilding and development within existing urbanized areas.

Action 46: ABAG, counties and cities support State and Federal legislation providing financial support to local and regional agencies for carrying out development management policies and reviews to achieve air quality standards, especially to mitigate adverse impacts on low- and moderate-income households.

Policy P: Adopt a coordinated regionwide program for carrying out actions for attainment and maintenance of air quality standards through development and land use management actions by cities, counties, special districts, ABAG, BAAPCD, MTC, LAFCOs and other appropriate local and regional agencies.

Action 47: ABAG identify, within six months of General Assembly adoption of an initial air quality maintenance plan, which implementing actions are being carried out by local and regional agencies.

Action 48: ABAG include, in each annual revision of the AQMP, agreements reached among local and regional agencies for carrying out land use and development management actions included in the initial AQMP.

Action 49: ABAG shall include, in each annual revision of the AQMP, an identification of actions not being carried out by all appropriate agencies, and which actions are to be carried out by appropriate agencies by the next annual revision of the AQMP.

PROCEDURE FOR MODIFYING DRAFT AQMP PROPOSALS

The draft AQMP proposals, if implemented, demonstrate attainment and maintenance of the oxidant standard. The thrust of the program is twofold:

- 1) Implementation of a comprehensive strategy requiring additional technological controls on stationary and mobile sources, transportation controls and land use management programs, and
- 2) Continuation of the BAAPCD's review of new or modified sources (New Source Review rule) and implementation of an indirect source review program for major traffic generators (e.g. shopping centers, airports, sports facilities). New Source Review could continue in its present form or in a modified form to allow for emission offsets.

The New Source Review (NSR) and Indirect Source Review (ISR) programs are used to make up the difference between the emission reductions occurring from other programs and what remains to be done to meet the standard in 1985, and to maintain it thereafter. Figure 27 in Section 6 showed the relative role played by the different programs to demonstrate attainment and maintenance of the standard.

Two general types of changes can be made to modify the plan:

- 1) Addition, deletion or substitution of measures proposed in the Comprehensive Strategy.
- 2) Addition, deletion, or substitution of measures for the New Source Review and Indirect Source Review programs.

Some combination of these approaches is also possible. However, in considering modifications to the draft AQMP proposals, the major factor is whether or not the new proposals suggested would demonstrate numerically that the standard can be met by 1985-87 and maintained thereafter. This demonstration is

required by Federal regulations. It should not be assumed, however, that eliminating measures from the Comprehensive Strategy can be readily compensated for by applying the new and indirect source review programs more stringently. There are limits to the effectiveness of those programs, and if they are applied in strict form they will reduce the region's ability to achieve other important social and economic objectives.

To demonstrate how the draft AQMP proposals might be modified, two examples are provided below:

Example 1: Change the Comprehensive Strategy to delete the increased tolls and regional parking strategies

Option A: Substitute increased gas taxes and smog charges to make up the difference in emission reductions needed; or

Option B: Recommend modification to the New Source Review rule to require additional off-sets from new and existing industries. For example, instead of a 1.2 to 1.0 off-set in emissions, a 1.4 to 1.0 off-set in emissions might be required of new industries.

Example 2: Change the Comprehensive Strategy to delete all land use and transportation control proposals

Option A: Recommend substituting a ban on small gasoline engines (e.g. such as lawn mowers and chain saws) and catalytic converter retrofit program to make up the difference in emission reductions needed; or

Option B: Recommend substituting a limited gasoline rationing program to make up the difference in emission reductions needed.

As the EMTF, ABAG Executive Board and the public review the draft AQMP proposals and develop options for consideration, two factors are important:

- 1) The plan is required to demonstrate the standard being met by 1985-87 and maintained thereafter,
- 2) The plan should provide flexibility to account for more monitoring data which may suggest the need for more or less stringent programs.

RECOMMENDATIONS TO CONGRESS AND THE CALIFORNIA LEGISLATURE

As noted previously in the plan recommendation tables, adequate legal authority does not exist to carry out a few of the recommendations contained in the Draft Environmental Management Plan. In addition, certain implementing actions included in the plan chapters involve legislative advocacy, because if local governments in the San Francisco Bay Region are to be expected to carry out actions to achieve effective environmental management in the region, they will need the involvement of Federal and State legislators in changing laws that will make it easier for environmental management to be achieved in the Bay Area.

Water Quality Management

As noted in Chapter III effective implementation of oil spill prevention and cleanup in San Francisco Bay and on its shoreline would be improved if the California Legislature were to designate a single existing agency to coordinate activities of agencies involved in oil spill prevention and cleanup. Improved cooperation is necessary among the U. S. Coast Guard, the Environmental Protection Agency, the California Department of Fish and Game, the San Francisco Bay Regional Water Quality Control Board, the State Office of Emergency Services, the State Department of Fish and Game, the State Department of Transportation, the San Francisco Bay Conservation and Development Commission, and local fire departments. Water Quality Management Recommendation 12.1 is that a single agency--the San Francisco Bay Conservation and Development Commission--be designated by the State Legislature to monitor oil spill prevention and cleanup.

Recommendation 1 to the California Legislature: Designate the San Francisco Bay Conservation and Development Commission for a period of 2 years to monitor State and local oil spill prevention and cleanup operations. At the conclusion of the two-year period the legislature would be presented with recommendations on improvements to oil spill prevention and cleanup activities, if determined to be necessary.

Water Quality Management Actions 12.7 and 12.8 refer to Federal and State Legislation that would increase the liability of firms or individuals responsible for oil spills, and that would provide compensation for damage caused by spills.

Recommendation 1 to Congress: Enact legislation on liability requirements for firms or individuals engaged in transporting, drilling, producing, processing, storing, transferring or otherwise handling oil.

Recommendation 2 to Congress: Enact legislation requiring compensation for all types of damage caused by oil pollution in or on U. S. territorial waters subject to Federal law or regulation, and oil pollution in foreign territories where damages are recovered by a foreign claimant under provisions specified by the legislation.

Recommendation 2 to the California Legislature: Unless preempted by Federal law, enact legislation on liability requirements and compensation to prevent water pollution from oil spills.

Water Supply Management

Additional State legislation may be necessary to ensure that cities and counties revise their building codes to include water conservation devices in new construction, and this would be determined in the continuing planning process for water supply.

Recommendation 3 to the California Legislature: If determined to be necessary by the time of the first annual revision of the Environmental Management Plan, enact legislation requiring cities and counties to revise and update building codes to include water conservation devices in new construction.

Water Supply Management Action 2.4 calls for legislation to provide incentives including tax incentives, for retrofitting domestic water conservation devices and agricultural water conservation. Chapter 9 calls for ABAG to work with appropriate agencies and legislative committees to develop legislation providing such incentives.

Recommendation 3 to Congress: Enact legislation providing incentives for water conservation in existing building and for agricultural water conservation.

Recommendation 4 to the California Legislature: Enact legislation providing incentives for water conservation in existing buildings and for agricultural water conservation.

Solid Waste Management

Action 7.2 of the Solid Waste Management chapter calls on ABAG to work with other agencies to explore the possibility of legislative changes that would further streamline the permit approval process for solid waste projects and facilities.

Recommendation 5 to the California Legislature: Enact legislation streamlining the permit process for solid waste management projects and facilities, if such changes are determined to be necessary in the continuing planning process for solid waste management in the Bay Area.

Action 9.1 of the Solid Waste Management chapter calls for legislative and administrative changes that promote waste reduction. Changes in standards and regulations would reduce quantities of wastes produced in manufacturing, reduce generation of packaging materials, make recovery of some products more feasible, and permit increased use by manufacturers of secondary materials and products containing secondary materials. Action 11.1 calls for legislative changes that would improve the competitive position of secondary materials and products containing secondary materials. Such changes could include removal of

tax-favored status for virgin materials, changes in rate structures for transportation of secondary materials or products containing secondary materials, and requirements to include secondary materials in products, where feasible.

As part of the continuing planning process for solid waste management, ABAG will develop detailed proposals to be implemented by Federal and State legislation to promote waste reduction and improve the competitive position of secondary materials and products containing secondary materials.

Recommendation 4 to Congress: Enact legislation to promote waste reduction and to improve the competitive position of secondary materials and products containing secondary materials.

Recommendation 6 to the California Legislature: Enact legislation to promote waste reduction and to improve the competitive position of secondary materials and products containing secondary materials.

Air Quality Management

The Air Quality Management chapter calls for ABAG to support legislation improving the ability of local governments and regional agencies to take actions to achieve compact development in the Bay Area, thereby reducing automobile travel. The legislative recommendations included here are drawn from the action statements for the compact growth policies of the air quality plan recommendations.

Recommendations 5 to Congress and 7 to the California Legislature: Enact legislation providing local governments with adequate fiscal resources to provide incentives to public and private redevelopment in urbanized areas.

Recommendations 6 to Congress and 8 to the California Legislature: Enact no legislation that would hamper the ability of local governments to carry out rebuilding programs to increase job and housing opportunities in existing urbanized areas.

Recommendations 7 to Congress and 9 to the California Legislature: Provide subventions and other fiscal assistance to cities and counties carrying out development actions to achieve air quality standards.

Recommendations 8 to Congress and 10 to the California Legislature: Enact legislation providing tax incentives to the private sector for rebuilding and development within existing urbanized areas.

Recommendations 9 to Congress and 11 to the California Legislature: Provide adequate financial support to local and regional agencies for carrying out development management policies and reviews to achieve air quality standards, especially to mitigate adverse effects on low- and moderate-income households.

WHAT HAPPENS AFTER THE PLAN IS APPROVED

So that all the continuing planning process recommendations can be read conveniently without the accompanying text, they are repeated as follows:

Plan Implementation Recommendation 1: Implement the initial plan as much as possible, by existing governmental agencies using current authority.

Plan Implementation Recommendation 2: Where current legal authority for carrying out plan recommendations does not exist, enact legislative changes to obtain such authority, as recommended in Chapter VIII (Recommendations to Congress and the California Legislature) of the Environmental Management Plan.

Plan Implementation Recommendation 3: Implement the following short-term improvements for environmental management:

- A Memorandum of Understanding between ABAG and the San Francisco Bay Regional Water Quality Control Board to integrate water quality planning by the two agencies.
- A formal resolution establishing a coordinated water quality research and data collection program.
- An agreement among major water and possibly wastewater agencies to form a water management coordinating council to address regional water supply issues.
- A continuation of existing agreements among agencies presently participating as the Air Quality Maintenance Plan Joint Technical Staff.
- An agreement among the Bay Area Air Pollution Control District, the Metropolitan Transportation Commission and ABAG on the implementation of Indirect Source Review (ISR).
- Specific administrative procedures for streamlining the permit system for solid waste facilities.

Plan Implementation Recommendation 4: Continue the Environmental Management Task Force, with its current size and composition, as the policy advisory committee to ABAG for a period of up to two years.

Plan Implementation Recommendation 5: Continue the existing staff arrangements for air quality planning.

Plan Implementation Recommendation 6: Establish a joint water quality planning staff similar to that for air quality planning. This staff would be drawn from ABAG and the Regional Water Quality Control Board.

Plan Implementation Recommendation 7: Maintain advisory committees to meet as needed during the continuing planning process.

Plan Implementation Recommendation 8: Continue the Program Review Board after approval of the initial Environmental Management Plan.

Plan Implementation Recommendation 9: Continue a broad-based public participation program during the continuing planning process. In addition, special efforts would be made to involve low income, minority and age-category groups in the program.

Plan Implementation Recommendation 10: Expand the EMTF Procedures Manual to guide the continuing planning process. Additions necessary to convert initial planning into a continuous effort would be incorporated into this manual.

Plan Implementation Recommendation 11: Include in the annual update by the Association of Bay Area Governments of the Environmental Management Plan the following:

- o Changes recommended as a result of non-compliance with the plan in the preceding year.
- o New policies and actions.
- o Recommended response to changes by State, Federal or other implementing agencies.
- o Formal action on conditions adopted by State or Federal agencies when approving the preceding year's updated plan.

Plan Implementation Recommendation 12: Give high priority attention to the following sources for financing the continuing planning process:

- o Continued funding under Section 208 of the Federal Water Pollution Control Act.
- o Funding under the Clean Air Act Amendments of 1977.
- o Funding under the Resource Conservation and Recovery Act of 1976.

Plan Implementation Recommendation 13: For the period up to two years following approval of the initial plan, use local sources, including local dues to ABAG, primarily to provide the required matching funds for Federal and/or State assistance.

Plan Implementation Recommendation 14: Develop and implement a long-term program for financing environmental management beyond the initial two-year period using a combination of local, State and Federal funds

Plan Implementation Recommendation 15: Conduct the continuing planning process tasks as described in Chapter IX (What Happens After the Plan Is Approved) of the Environmental Management Plan.

Affirmative Action Policies For the Environmental Management Plan

(At the December 14, 1977 meeting the Environmental Management Task Force voted to add these policies to the draft plan for discussion.)

The Environmental Management Plan would have important effects on creation of business opportunities, jobs and related factors affecting minorities, women and other groups identified in State and Federal laws. The following policies have been drafted to reflect ABAG's role as a voluntary association of local governments, conducting regional planning and reviewing Federal grant applications. The policies are designed to make sure that existing affirmative action laws and programs are effectively carried out during implementation of the Environmental Management Plan. No changes in laws or responsibilities are recommended. To make affirmative action a regular and predictable part of all EMP implementation program the ABAG role would be designed to assist member governments and implementing agencies meet their responsibilities. The policies aim to coordinate the many separate programs now under way, to make sure the information in the Environmental Management Plan is made available for use by affected agencies and groups, and to ensure that minorities and protected groups can fully participate in the economic growth of the environmental management industry. The policies would be incorporated in the continuing planning process for implementing and updating the Environmental Management Plan.

- I. POLICY: Propose to Federal, State and local governments a regional approach for the coordination of the various affirmative action activities which would assist local governments and implementing entities in their efforts to meet affirmative action standards applicable to the Environmental Management Plan.

Action: Request that the Federal Regional Council and Federal Executive Board participate with ABAG, appropriate State agencies, regional agencies involved in the Environmental Management Plan, and local governments, in developing procedures for the coordination of all grants and contracts awarded by Federal, State and local governments which provide assistance to affected groups (minorities, women, etc.) for business development and manpower training.

The goals of such procedures would be to:

1. Improve the flow of information regarding minority* business development and manpower training to local governments and implementing agencies charged with meeting Federal, State, and local affirmative action standards.
2. Improve coordination of affirmative action efforts by various levels of government which are designed to assist minorities in availing themselves of opportunities created by the inclusion of affirmative action measures in the Environmental Management Plan.

*For purpose of this policy statement an affected group is also implied in the term minority.

3. Increase the positive impact on minorities resulting from affirmative action activities, through coordination of those activities with the continuing planning and implementation process of the Environmental Management Plan.

II. POLICY: Provide a regional data base that contains pertinent information on current business and employment opportunities as well as future projections on the availability of such opportunities resulting from the implementation of programs and control measures of the Environmental Management Plan.

Action: Develop methods for centralizing the collection and dissemination of information regarding employment and minority entrepreneurial opportunities which result from Environmental Management Plan activities. This could be done in conjunction with the State Employment Development Department and regionwide, private non-profit organization, and community action agencies.

III. POLICY: Improve monitoring of affirmative action programs and activities by local governments and implementing agencies that have been assigned responsibilities to carry out the Environmental Management Plan.

Action: Request by ABAG that cities, counties, special districts and relevant regional agencies each designate an internal unit (department or individual) to be assigned monitoring responsibilities for affirmative action compliance in program or projects implemented in conjunction with the Environmental Management Plan.

IV. POLICY: Include the affirmative action monitoring units designated by public agencies in the A-95 review process for all Federally funded plans and projects designed to implement the Environmental Management Plan.

Action: Require ABAG clearinghouse staff to submit to designated units in local and regional agencies, a list of potential regional affirmative action issues and the staff's assessment of the effects of those issues for all Environmental Management Plan projects which require A-95 review. The departments or persons would be invited to comment on the affirmative action implication of the project. Where such comments are negative, ABAG's clearinghouse staff would work with the agency involved to attempt to reduce the potential conflict or would include such comments in the overall assessment of the project.

V. POLICY: Include review of progress in meeting affirmative action regulations as an integral part of the annual review of actions taken to carry out the Environmental Management Plan.

Action: Identify private and public service organizations whose principal activities involve civil rights for minorities or other groups covered by affirmative action requirements (e.g. women, handicapped, veterans, etc.), and whose activities are regional in scope, and include such organizations in the review and evaluation of the impact of regional affirmative action efforts.

Action: Appoint a regional affirmative action coordinating advisory committee consisting of representatives from the officially designated affirmative action agencies and representatives from regional civil rights and ethnic minority organizations as deemed appropriate--except that in no case would private representatives constitute a majority. This committee would meet periodically with ABAG staff to review progress and advise the regional agency on affirmative action problems of regional significance.

VI. POLICY: Avoid unnecessary negative social and economic impacts on minorities.

Action: Encourage implementing agencies to consider affirmative action implication of projects. Attention should be given to possible economic and social disruption in communities where high concentration of minorities and poor persons reside. If such projects are necessary, ABAG should encourage and assist local governments in using every effort possible to minimize predictable negative impacts.

Action: Provide for an on-going assessment of the economic and social relationship between housing choices and job location to prevent disproportionate long-distance home-to-job travel by minorities caused by plan recommendations for shifts in land use policy.

VII. POLICY: When the scarcity of a resource, such as water, requires rationing, encourage the use of per capital allocations as opposed to percentage cutbacks to avoid disproportionate impact on low and moderate income people.

VIII. POLICY: Improve information flow and involvement among minority community in environmental matters.

Action: All information regarding the Environmental Management Plan should be provided in languages reflective of the Bay Area's population.

IX. POLICY: Increase minority career opportunities generated by environmental management programming.

Action: Encourage the location of research and development projects, such as the monitoring of water quality, in areas easily accessible to educational institutions and public schools

which have large minority enrollments.

Action: Coordinate with the various educational training centers to ensure that information on job opportunities resulting from environmental management are incorporated into these programs.

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